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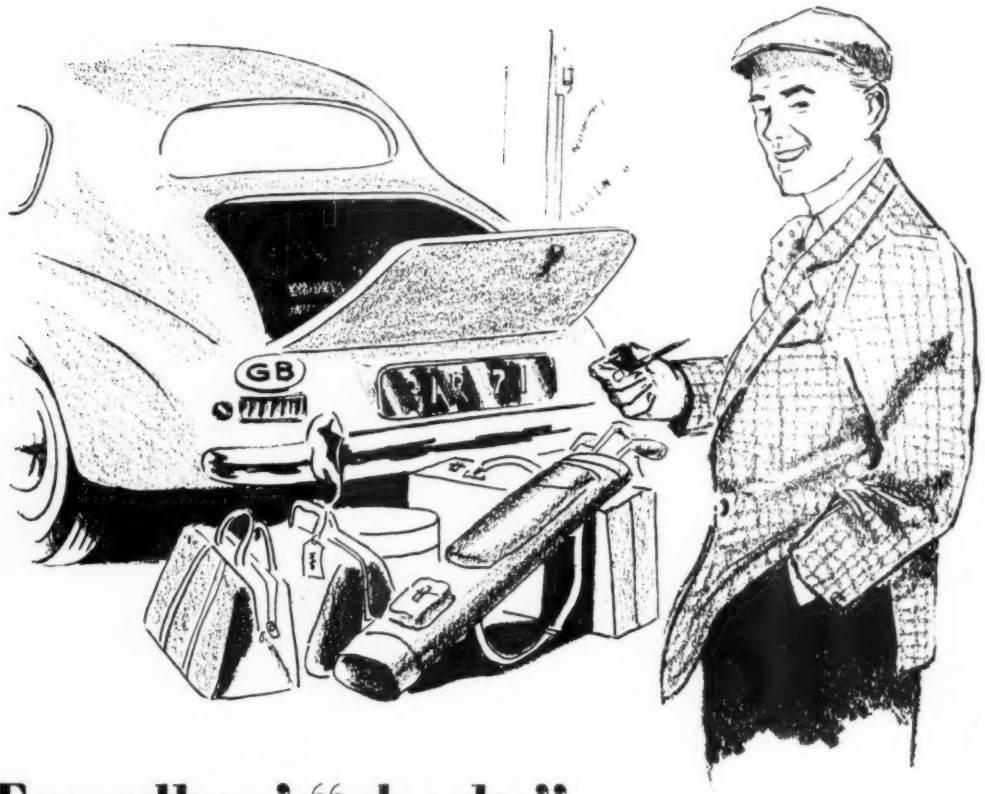

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The Autocar

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Driving Safety—A Major Advance

AVIATION has been responsible for several of the innovations and developments in modern motor cars. Last week another device, the non-skid brake widely used on aircraft, was demonstrated in experimental form on a Jaguar car. The non-skid units were fitted in conjunction with Dunlop disc brakes, another system earlier adopted from the aircraft world and also pioneered by Dunlops and Jaguars. This particular non-skid brake has been referred to on more than one occasion in *The Autocar* under its aircraft name of Maxaret. We felt confident that it could make such an important contribution to driving safety that its adoption on the roads was assured and would not be long delayed. A description of the non-skid unit and impressions of its effects on braking appear overleaf.

It is fair to state that the adoption of non-skid braking for aircraft had a profound effect both on the safe stopping distance for large aircraft, and upon their tyre wear. The main wheels or bogeys on aircraft, which do most of the braking, are not steerable. On the other hand the front wheels of a car, which also take the greater part of the braking effort, are steerable. It is here that non-skid braking offers even more to the road vehicle than it does to the aircraft, because a locked and skidding wheel cannot be used for steering, and thus directional control is lost when braking heavily. With non-skid front brakes full retardation can be had *at the same time* as steering control. This is the first big safety factor.

Next there is the fact that a skidding tyre takes much longer to stop a car than one on the point of skidding but still just rolling. An automatic non-skid control keeps stopping power at its maximum and therefore appreciably reduces stopping distances.

Then there is the matter of pedal effort. Motorists have to push much harder than they need for normal braking, simply because very light pressures would lead to excessive sensitivity and to skidding as a result of wheel-locking on wet and slippery surfaces. Automatic non-skid brakes eliminate this risk, and because the pedal travel is negligible, full braking can be instantaneous in emergency. Brakes could safely be made feather-light if need be.

Again, with current braking systems, however good they may be, there is the problem of patchy road surfaces, which can cause one front wheel to skid but not the other. Such uneven retardation is, to say the least, disconcerting for the driver. Non-skid brakes—the system for one wheel linked with that of the other—prevents this unevenness.

As for tyre wear, while the reduction due to avoidance of wheel locking will not be the major consideration it is with aircraft, a worth-while saving should result.

The Cost

WHAT THEN are the snags? So far as we can see there are none except price, and happily this is not insurmountable. Some years ago, in answer to a question about the cost of aircraft non-skid brakes, a figure of £750 for a pair of units was quoted. These were, of course, fully approved to aircraft standards. For cars we can do no more than estimate, since it will become, as always, a matter of production numbers and tooling. But the assessment made on the next page of £100 per vehicle, in the early stages and not too long from now, is probably representative. It might not be unreasonable to ask for financial encouragement for such an important aid to safety—from the government in terms of a purchase tax waiver on non-skid braking systems, and from insurance companies as a small rebate on premium.

FOOTNOTE. And now, perhaps, the mathematically minded may care to indicate how a car can be brought absolutely to a standstill and held there if the wheels cannot be locked.

ULTIMATE BRAKING EFFICIENCY

Dunlop Anti-Skid Equipment for Road Vehicles
An Important Contribution to Safety

OF all the improvements which have been made in post-war motor cars, those to braking have probably been greatest, bearing in mind the increase in performance which has also occurred. It would be comparatively easy, and not very expensive, particularly with disc brakes, to provide even greater efficiency, were it not for the fact that vehicles have to be brought to rest on icy or wet roads as well as on dry surfaces. A compromise has to be made between stopping a car from high speeds with high pedal loads on a dry surface, and preventing the wheels from locking on slippery surfaces in emergency applications.

Maximum braking on any wheel occurs when the brakes are so applied that the wheel is on the verge of locking, and the movement between the tyre and road is about to change from a rolling to a skidding action. If the wheels lock, stopping distance is greater but, even more important, loss of steering control results. With only the rear wheels locked, there is a partial or complete loss of control, and the car readily goes into a spin. Locking the front wheels only produces a stable condition in which the car travels in a straight line so long as the rear wheels maintain their grip on the road; but in this condition, there is a complete loss of directional control.

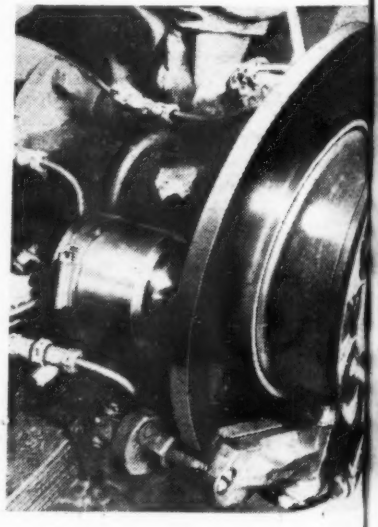
Since 1952, Dunlops have been fitting a device to British and foreign aircraft braking systems which prevents the locking of landing wheels, and it is not surprising, therefore, that this work has been extended to road vehicle use, although at the moment, this application is still in the early experimental stage, and rather costly. Nevertheless, it is of such importance and would provide such an improvement in safety that, when fully developed, there will be immediate markets for it, even though the price may be high initially.

At the moment, the equipment is based on that of the aircraft system produced to A.I.D. standards, and the company are not prepared to express an opinion on the ultimate price when production technique is cheapened. It is possible, however, to draw a comparison with the disc brake. When this was first produced in experimental form for the Le Mans-winning Jaguars in 1953, it was expensive. In production form now, these brakes are available on the 3.4 Jaguar at a cost of £36 15s, and from inquiries it would appear that they are being fitted to approximately 95 per cent of the models sold.

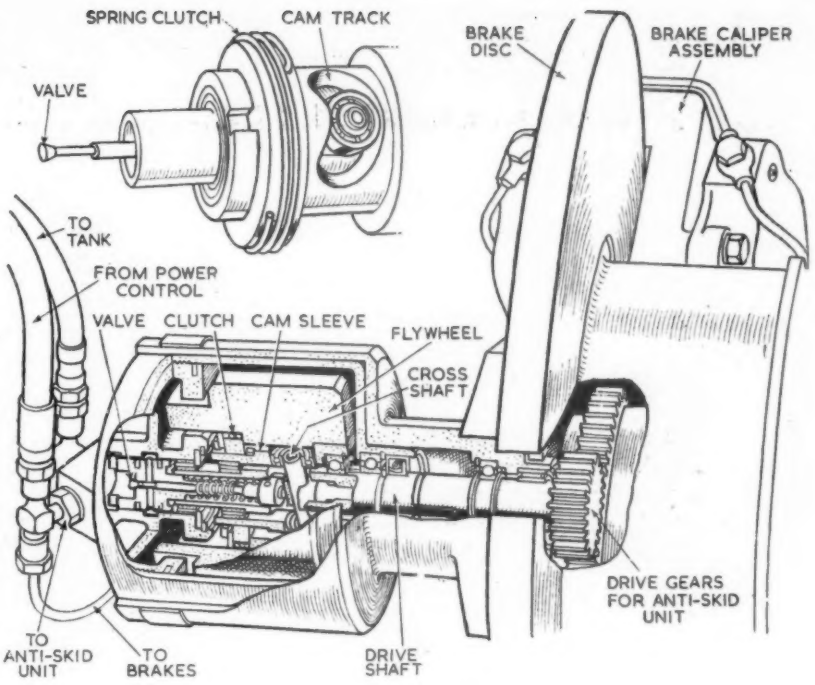
In our opinion, if the Dunlop anti-skid equipment were to be offered in the early stages of its production form as an extra, even if its cost were between £80 and £100, at least 50 per cent of purchasers would consider the reward well worth this outlay.

Irrespective of road surface conditions, when stopping from high speed, the driver can operate the brake pedal with the same pressure, and the control units automatically bring the car to rest in the shortest possible distance dependent only upon the coefficient of friction between the tyre and road surface—and always under complete control.

The Dunlop unit cannot be applied to static displacement hydraulic systems at present in use on road vehicles as these are unable to compensate for fluid exhausted during anti-skid operation. It requires a powered supply operating at approximately 1,000 lb sq in (about the same pressure as there is in the pipe-lines when operating a current orthodox system at maximum retardation). Thus an engine-driven pump with accumulators for emergency reserve is necessary. Such a system is used in the current Citroen DS19 and, incidentally, opens the field for wider adoption of hydraulics for other functions, as in the Citroen.



The anti-skid unit in position on a rear disc brake. Its size can be judged in conjunction with the brake disc, which is 12in diameter



The anti-skid unit as installed on the Jaguar Mark VII test car, showing the spring clutch which drives the flywheel and the camtrack which opens the valve to relieve the brake pressure

It is not necessary to use disc brakes with the system, but they are a natural corollary to it, as the braking pads must have no self-servo action—an inherent feature of disc brakes. Thus the device could be applied to drum and shoe type units providing that all the shoes had trailing action, i.e., no leading shoes. With any self-servo action in the shoes the "unsticking" torque would be higher than with shoes having no servo action; it would thus increase the cycling period of the anti-skid unit. Cycling is almost wholly dependent on the ability of the brakes to relieve the torque, for the frequency of the anti-skid unit is almost instantaneous—tests have shown it to be less than 1/10th second.

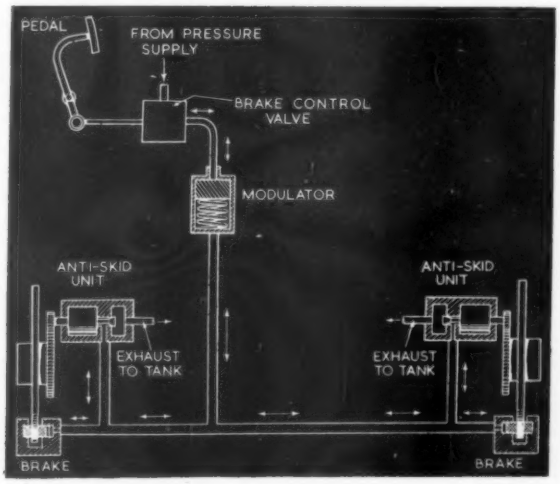
At the core of the Dunlop system is a unit (which could add no more than 2 lb to the unsprung weight) driven from the wheel by means of a geared ring on the inside of the brake disc, and it operates on the overrun flywheel principle. A small flywheel, driven from each braked wheel, is decelerated by a spring during braking. In normal operation, the brake disc (or drum in the case of shoe brakes) and flywheel turn at the same speed, and the inlet valve is open, allowing operating fluid to pass through to the brake operating cylinder on application of the pedal. In these conditions, the energy given up by the flywheel is not sufficient to collapse the spring, and no operation of the anti-skid unit takes place.

If, on the other hand, the deceleration of the wheel is excessive, the flywheel collapses the spring and a valve opens to relieve the brake pressure, until the flywheel is returned to its normal position by the spring as the wheel regains non-slip speed. Thus, this unit cycles automatically between the brake-on and brake-off position, comparable with the gentle pumping of the brake pedal technique used on icy surfaces by experienced drivers to prevent the wheels locking.

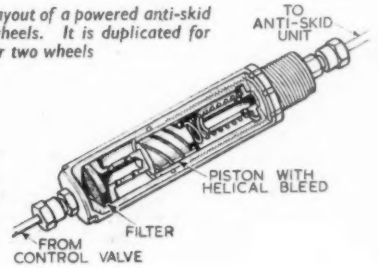
Reference to the sectioned drawing shows that there is a drive-shaft mounted on non-friction bearings. This drive is transmitted through abutting faces on the shaft and cam-sleeves, and then through the clutch mechanism to the flywheel. Between the shaft and cam-sleeve angular movement of 30 deg is permitted; this takes place on the inner pair of ball and needle roller bearings. During this movement, the cross-shaft is prevented from turning in relation to the drive-shaft by slots. Therefore, the bearings ride up the face of the cam-slot in the sleeve and move the guide approximately 1/16in. This movement takes place against the small helical valve spring in the centre, the load of which determines at what angular acceleration the unit will function.

A small gap between the foot of the valve and the spring support allows a small initial movement of the flywheel against the outer valve spring load, after which the balanced valve is lifted off its seat to relieve the brake pressure. As deceleration ceases and the road wheel resumes its non-slip speed, the shaft catches up with the flywheel and returns the bearings to the base of the cam slot, simultaneously closing the relief valve. The clutch mechanism permits a small degree of slip between the flywheel and cam-sleeve during violent deceleration, such as may occur if a road wheel locks momentarily from a sudden drop in the coefficient of friction between tyre and ground.

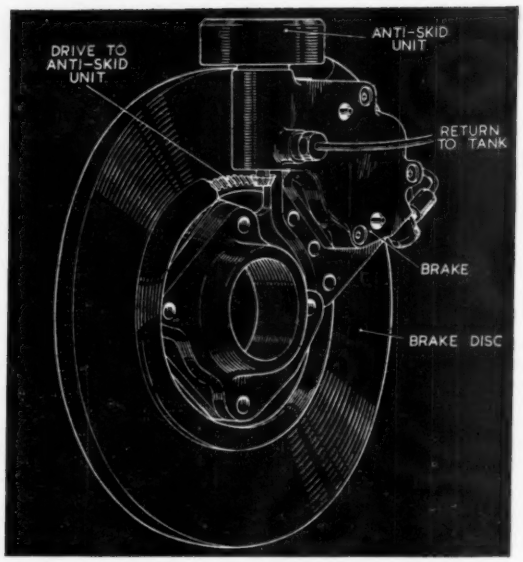
The brake pedal is linked to a control valve. When this is opened by operating the pedal, fluid under pressure from the engine-driven pump *via* the pressure storage tank flows through two modulator units to the front and rear brakes respectively. This ensures that the brakes are coupled in pairs, so that a

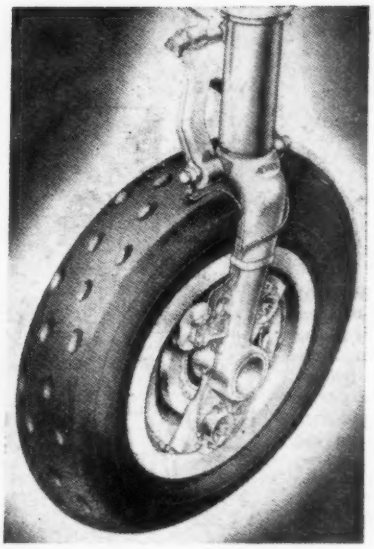


Right: Diagrammatic layout of a powered anti-skid system linked to two wheels. It is duplicated for the other two wheels



The function of the modulator is to allow an initial flow of fluid without restriction, to take up brake clearance without delay





ULTIMATE BRAKING EFFICIENCY...

Left: Suggested design for an anti-skid unit mounted integrally with a single spot disc brake. The driving gears would need to be carefully protected against abrasive wear. An example of the aircraft Maxaret unit from which the vehicle anti-skid brake unit was developed, is next shown on a Hawker Hunter landing wheel. In this example the unit is driven by a small rubber tyre which runs against the inner side of the wheel rim

skid on either front wheel will cause the pressure to be relieved in both; the same applies to the rear wheels. With orthodox braking systems it is often the difference in road grip between the two front tyres which results in instability.

The modulator permits an initial flow of fluid to take up the brake clearances and permit full application without delay. Having applied the brakes, flow through the modulator is restricted by a helical groove round the outside diameter of the piston, so that as the valve in the anti-skid unit opens to correct a skid, the outgoing flow through the valve is much greater than the ingoing flow through the modulator, and the brake pressure is decreased rapidly.

The System Under Test

It has been possible to carry out some tests on this system with a Mk. VII Jaguar saloon at Dunlop's test grounds. One of the surfaces was especially slippery and was flooded with water. Runs were made with the device in operation on all four wheels, approaching the test area at a speed of approximately 50 m.p.h.; when the brakes were applied the vehicle remained under perfect control because the wheels kept turning the whole time. It was also possible to repeat the runs with the system applied to (a) front wheels only; (b) rear wheels only; and (c) inoperative.

No measurements were taken during these runs, but it was not necessary to calibrate to see the difference—it was evident. What is of greater importance is the fact that the vehicle was under complete control when the anti-skid device was in operation; in either of the other conditions, not only was the stopping distance greater but it was impossible to prevent the vehicle going into a spin once it started to slide.

Dunlops have released figures of similar tests made with smooth tyres fitted to a car running on the flooded surface of the skid track—a condition about equal to a car having good tyres on ice. In these runs the brakes were applied at 35 m.p.h. With anti-skid, stopping distances of 202ft and 207ft were recorded; without the system in operation the distances were 257ft and 269ft.

A further demonstration on a normal asphalt surface, again flooded with water, enabled steering-while-braking comparisons to be made. A series of markers were laid out, so that the car could be driven through them at a speed of 50 m.p.h. with the brakes on. With anti-skid, there was no difficulty, as the vehicle was always responsive to the steering. Without anti-skid the wheels locked, the vehicle was out of control, and it was impossible to negotiate even the first marker. During braking from about 50 m.p.h. the "cycling" action of the anti-skid unit could not be detected, and it was barely discernible when stopping from 80 m.p.h.

This ability to maintain steering control is unquestionably the greatest asset of the system. In normal driving, the natural reaction is to release the brakes as soon as the car makes the slightest deviation from its normal path, even though the wheels may not be fully locked. The anti-skid system shows up to the greatest advantage where the tyre-to-ground coefficient of friction is lowest, i.e., with a worn tyre on slippery surfaces. Of great importance is the fact that, with anti-skid, it is possible to make considerably greater braking power available to the driver than at present, for no matter how hard the brakes are applied the wheels will never lock, and therefore a compromise solution such as is necessary with current braking systems is avoided.

Initially, the first application will undoubtedly be to high-speed and commercial vehicles, and it will probably be some time before the cost could be reduced to such a level that it could be applied economically to a small family saloon. No longer would the change in braking ratio of front to rear wheels between the laden and unladen conditions of a commercial vehicle be a problem.

This latest Dunlop development can make an almost immeasurable contribution to vehicle safety. In addition to bringing a vehicle to rest in the shortest distance possible with the prevailing coefficient of friction between tyre and road, the driver can also steer out of any trouble which may be in his path. There need be no fears of added complications resulting in unreliability. It is reassuring to know that aircraft weighing up to 45 tons rely on this ingenious device for braking from 100 m.p.h.

Future Developments

In its present form, as already stated, the anti-skid unit cannot be married to current braking systems, but Dunlops are conducting investigations to develop a new form of pressurized braking to which the device can be applied. Fluid under pressure is fed to a power valve which then pressurizes the system in proportion to the pedal load with zero travel; this power valve maintains the selected pressure by compensating for fluid exhausted during anti-skid operation. Should the power supply fail, the power valve continues to operate on fluid stored in a vacuum-operated power pack for a limited number of operations.

When this reserve of fluid is exhausted, extra travel of the brake pedal brings into action a piston working on the normal master cylinder principle, so that the system reverts to orthodox displacement operation for further emergency use. This extra travel also cuts off the exhaust flow from the anti-skid units, which puts them out of action, and fluid is not lost from the displacement circuit.

BRITISH RACING PARTNERSHIP

THIS is the second instalment of a series of articles which are, in effect, the diary of events leading up to the creation and subsequent operation of a racing stable. It covers the choice of drivers and mechanic. Apart from its intrinsic interest, the information may prove of value to those who are hoping to take up motor racing; it tells the background story leading up to the moment when the starter's flag drops. Part I was published on 4 April

PART TWO

WHEN it came to the choice of drivers, the first and immediate decision was to approach Stuart Lewis-Evans. This decision was influenced by several factors: Lewis-Evans was the sole leading driver who had no contract in formula 2, and he filled the specifications of a young man who was showing tremendous promise and ability. He was also, they decided, a man on whom they could pin their faith, and one who they knew would appreciate the trouble they were taking to prepare the car.

Having decided upon their first driver, and obtained his agreement in principle to the idea, they found that Stuart very wisely did not wish to agree to drive in too many races. He is contracted to drive Francis Beart's cars in formula 3, has—or then had—a probable contract with Aston Martin, and was likely to have a contract to drive Vanwalls in formula 1 events. Knowing the growing tendency of promoters to lay on "variety show" meetings, Lewis-Evans felt that it would be wrong to enter into any sort of binding contract with formula 2—which might mean that he had to drive when tired, and would not be able to give of his best.

This somewhat flexible arrangement suited Alfred Moss and Ken Gregory, as they had in mind a second driver—Tom Bridger. He had achieved considerable success in formula 3, though had never had any real backing or particularly sound equipment. Both were impressed, however, by the fact that, whenever he turned up at a race meeting he and his equipment were always spotless; he was not a temperamental, prima donna type of individual; he appeared to enjoy every single minute of his motor racing, was never flurried and never committed his car to a situation he could not control. He would never take a risk which was not a calculated one, and the calculation seemed always to be on the right side. He was, in fact, the driver whom they reckoned would benefit most from what they had to offer.

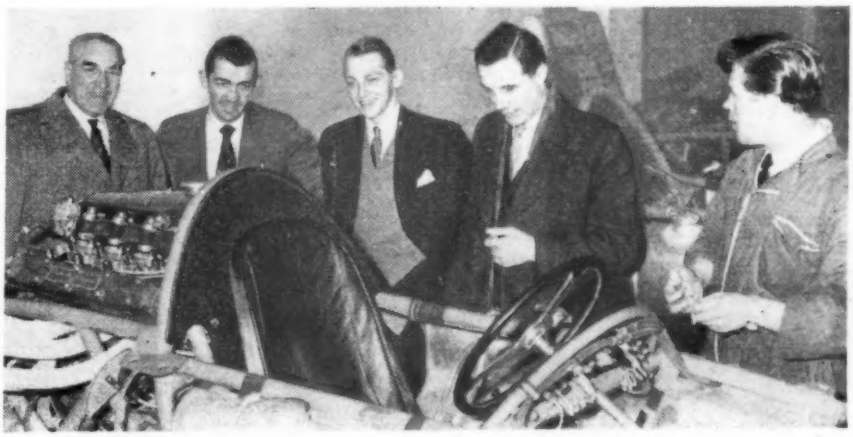
So Tom Bridger was signed up for the 1958 season—and an option has been obtained on his services for 1959, though, of course, this does not mean that he will not be free to go elsewhere if he is so disposed. It is believed that, with the effort that they plan to put into the enterprise this season, and the experience which they hope Lewis-Evans will impart to Bridger, next season will show a return for the financial outlay in 1958.

This season the sponsors are well aware that they may lose money, though, not unnaturally, they would prefer to break even. The intention, however, is to run a car as it should be run, and to set an example to others; if they can bring out an up-and-coming driver in the process, so much the better—and if that driver, ultimately, brings a list of successes to the *équipe*, its full purpose will have been achieved.

Stuart Lewis-Evans in the Cooper, driving to finish fourth in the Lavant Cup race at Goodwood last Easter Monday

It was decided that the only way in which the team could operate really successfully would be to build an entirely separate and individual garage-cum-workshop for the exclusive use of the team car—or cars. In addition they decided to employ full-time a mechanic in whom they had complete faith and whose sole job would be to look after the car. It so happened that, about the time the idea was being formed, Tony Robinson, who had been working for Bruce Halford, became free. He had actually been started on his racing career by Stirling and Alfred Moss and Ken Gregory, when they built the somewhat unsuccessful Cooper-Alta with Alf Francis. He worked for them for one year on the Cooper-Alta, and then for Maserati in 1954 and 1955; during 1956 and 1957 he worked for Bruce Halford, but at the end of last season, when Halford appeared to have no definite plans for this year, Robinson decided to leave his employ.

He was chosen from a list of 65 other applicants for the job partly because he was known to the *équipe*, for his tremendous love of motor racing, for his great experience of all the circuits on which the car is likely to race, and for his knowledge of the



Left to right: Alfred Moss, Stuart Lewis-Evans, Tom Bridger, Ken Gregory and Tony Robinson

BRITISH RACING PARTNERSHIP . . .

sport. He has been present at Coopers throughout the building of the car—for which he has been largely responsible. He knows precisely where every nut and bolt is to be found, and where every single component of the Cooper fits; he has learned in the process the quickest way of making repairs, or fitting any components which may become worn or damaged during the season's racing.

Robinson's sole responsibility will be the actual physical and mechanical preparation of the car—if he needs anything he will have only to ask for it. All his travelling arrangements, documentation, travel allowances, entries, bookings and so on will be attended to. Apart from looking after the car, he will have no other responsibilities than to receive his instructions as to where he is to report, which ship he is to catch, and at which hotel he has been booked when he arrives. This is considered extremely important; if he is to do his job properly, the mechanic, like the driver, should not have to think about a multiplicity of side-lines, only about his particular contribution to the success of the team.

Thus the driver will be able to put every reliance on the mechanic, in the knowledge that there is nothing to distract his attention from the main job. For this reason, too, care will be taken not to enter the car in so many events as to overtax the mechanic.

The drivers, too, will be looked after in this manner; their only concern will be to present themselves at the circuit and drive the car to the best of their ability. Although it is not within the terms of the contracts, the sponsors will try to persuade the drivers to stay at quiet hotels where they can get adequate rest. They are firm believers in discipline, and consider that it is absolutely necessary, on the night before a race, that the driver should go to bed at a reasonably early hour and should be able to drive to the circuit on race day in a leisurely fashion; he should know full well that the car will be ready in every respect and that all he has to do is get in and drive it.

Not only are the drivers to be discouraged from working on the car; such a thing will be completely forbidden. It is felt that a driver who feels clean and fresh before the start of a race will always do better than one who has been working, feels oily and possibly fatigued.

A story which remains in Gregory's mind concerns a visit he paid to Mercedes-Benz during the winter of 1953, to see Neubauer and to try to get Stirling signed up with the team. He was told by the great man that much as he admired Moss' performance in sports car events, he had never actually seen him compete in formula 1 with any success; if Moss was to impress them in formula 1 he should buy a car elsewhere and race during the coming season in it; if he did well they would consider him for 1955.

Neubauer said that he had three cars available at the time; they had a limited life, and if Moss was to be subjected to a really stringent test it would take 300 to 400 miles of motoring; these were miles that his drivers would need in practice, miles he could ill afford to spare in testing a quantity he did not know. He would far prefer, he said, to give those miles of practice to the quantities he did know, the drivers he had already selected.

This, Gregory feels, illustrates the correct attitude towards the job; it also illustrates the difficulty that a driver will find, however good he may be, when he approaches a big manufacturer. It is by giving up-and-coming drivers the opportunities that Moss was able to have that he hopes they may eventually get places in the formula 1 works teams.

Car Expenses Claims

WHEN a motorist is asked to submit a claim to the Inland Revenue for his car expenses, he often wonders whether or not certain items can be included. Obviously he will include the cost of petrol, oil, insurance, tax and the like, but may be doubtful about other items.

All repairs can be included, but if there have been any payments by insurance companies these, of course, must be deducted. Repairs cover the replacement of batteries, tyres and so on, but they cannot include any additions to the car, such as the fitting of a radio or any special gadgets. The true test is if the item replaced was originally in the car; if it is a new part or an addition, then this is not an allowable repair.

The cost of garage, if paid, certainly will be allowed, and this can include any special garage or parking fees, but if the motorist garages his car at home he can, quite rightly, charge a reasonable proportion of the rent or net annual value in lieu of garage rent.

The claim can also include such items as A.A. or R.A.C. subscriptions, or those to any similar associations which assist him in his motoring.

Fines should not be included in the claim, because they are not truly allowable deductions in connection with the cost of running the car, and this item of expense is not normally allowed. The claim will, of course, include all other minor incidentals, such as cleaning, overhaul and any other maintenance, and this can include all items of washing and similar cleaning expenses provided they are not performed by the owner.

If he does the work himself he should not include a charge for his own services, because the position would become ridiculous in so far that he would be allowed the expense, but would be assessed on the amount he has earned on his own car.

Depreciation is not allowed, but in lieu of that there is an allowable claim for wear and tear, which includes normally the initial allowance, the annual wear and tear allowance which has an additional one-fourth, and a balancing allowance should the car be sold at an income-tax loss. It must also be remembered that if a car is sold at an income-tax profit, then this is assessable to income-tax by means of a balancing charge.

Finally, all taxpayers should record all expenses they think are in connection with their car, including all such minor items as tips and the like, which may be occasioned when motoring, and they should submit a full, detailed and analysed statement to the Inspector of Taxes. He will disallow items which are truly not allowable, but will be considerably assisted in granting correct allowances.—E. V. S.

Books Received

A Shriek of Tyres, by Douglas Rutherford. Published by Collins, St. James's Place, London, for the Crime Club. Price 10s 6d.

After reading Rutherford's excellent book on motor racing, *The Chequered Flag,* one would expect the racing setting to this thriller to be accurate—accurate enough not to offend the purists, anyway. However, it is extremely difficult to reconcile the fictitious Romalfa that the hero drives with the extremely factual Ferraris, Jaguars and Maseratis in the opposition. It is difficult, too, for the purist to accept such characters as "Fred Harden, the fat, bushy-eyebrowed secretary of the British Racing Drivers' Club." And it is not strictly in the interests of the sport to suggest that this character could be "fixed."

With certain glaring exceptions, however, the motor racing background is true to life; the majority of it, even to the strictest student of the sport, is acceptable and typical of the circuits described. The story itself is exciting and gripping.

You and Your Car, by Leslie Webb and Phil Drackett, published by W. and G. Foyle, Ltd., 119-125, Charing Cross Road, London, W.C.2. Price 3s.

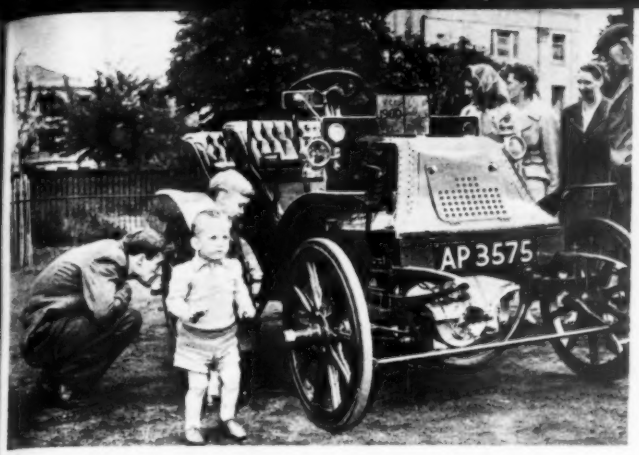
The authors, one of whom is Chief Assistant Engineer of the Royal Automobile Club, have tempered a good deal of good advice and information for the motorist with a lacing of humour; at its modest price this is very good value.

Ford Cars, by T. B. D. Service, published by C. Arthur Pearson, Ltd., Tower House, Southampton Street, Strand, London, W.C.2. Price 10s 6d.

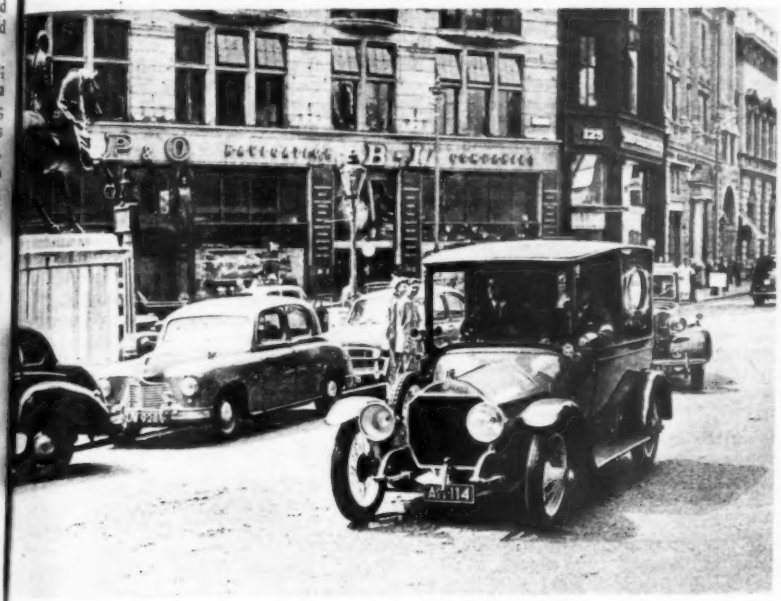
This is a second edition, revised and brought up to date, of a volume in the publishers' car maintenance series, giving practical guidance on the servicing and repair of Ford models from 1934 up to the present, and including technical data on the latest Consul, Zephyr and Zodiac. The 229 pages of text include 133 illustrations, and the ample index is a great help in tracing references to particular models.

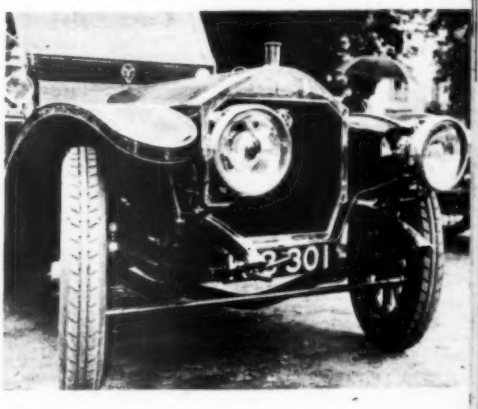
A Napier Occasion

150TH ANNIVERSARY PARADE IN LONDON

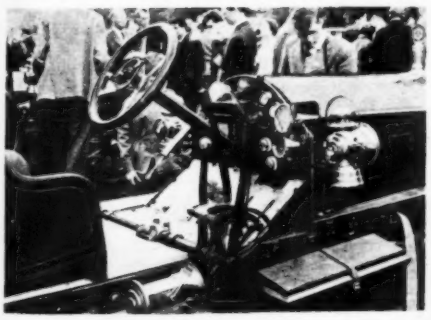


Show piece of last Saturday's parade in Regents Park was Derek Grossmark's superb 1900 Double Phaeton, the oldest surviving Napier known

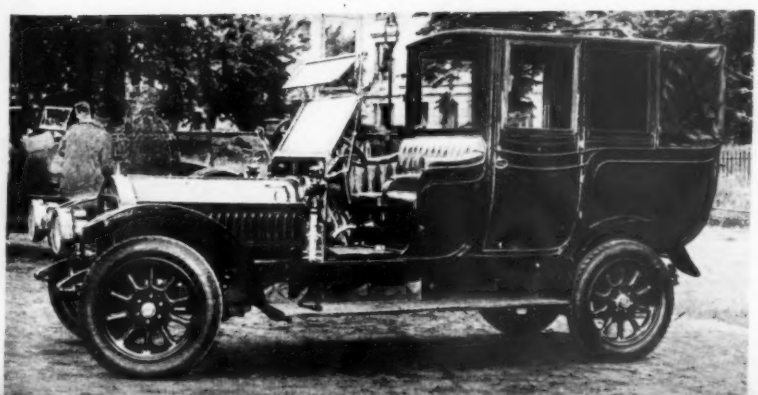


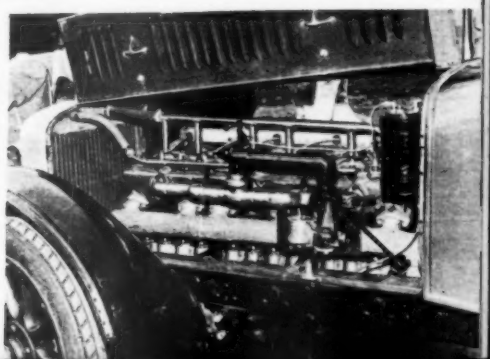


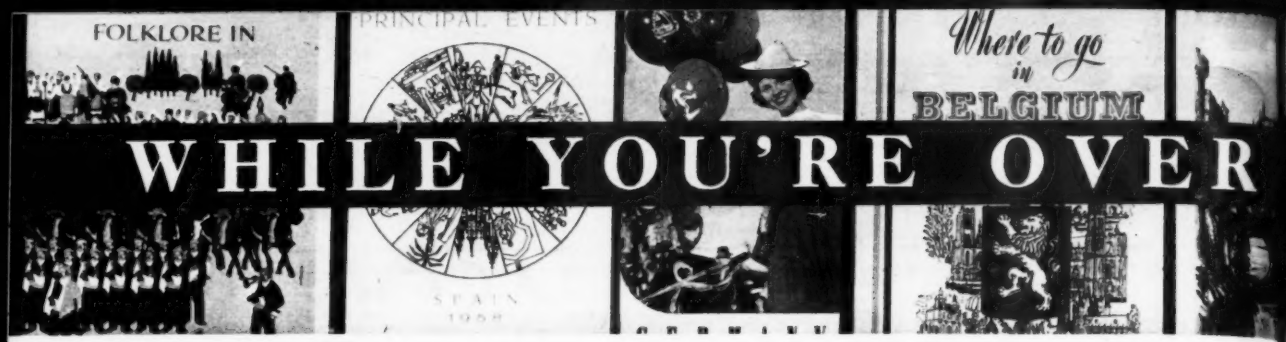
Left: the Hon. Patrick Lindsay takes his 1914 15 h.p. Gentleman's Estate Carriage through London's streets. Above: the characteristic tall radiator funnel and glittering Blériot headlamps of H. W. Ardran's 1907 Landaulette



Left: one hand brake, two gear levers and comprehensive instruments of F. W. Hutton-Stott's 1908 Hutton Racer. Right: the trappings of aristocracy in the Estate Carriage pictured above. The body is by Mann Egerton. Below, left: an expansive carriage of Edwardian magnificence—H. W. Ardran's six-cylinder 40 h.p. car of 1907, very recently restored. Below, right: a strange radiator disguises the identity of G. Evan-Cooke's 60 h.p. six-cylinder Napier of 1907







HOLIDAY-MAKERS seldom care to spend more time than necessary en route but one can easily miss by no more than half a day, or even half an hour, some local festivity on the way which is well worth seeing. Here are suggestions which may help to make more of a holiday abroad.

ON the way to your Continental holiday objective, why not make diversions to some of the many beauty spots or tourist attractions which lie near to the chosen route? The choice of them is enormous, and the main problem is to select the two or three most suitable places which deserve a visit. The impression is gained of an extended holiday and the benefit is greater if the journey takes on the character of a sight-seeing drive rather than a Race to the Riviera.

Full details and information on the special tourist events being held on the Continent this year may be obtained from the relevant government tourist offices, and to assist in this a list of them is given. These travel information offices are invariably most helpful, and are only too glad to produce a mass of free brochures and useful literature in return for an enquiring postcard.

From such sources and personal knowledge the following notes have been compiled to suggest a few ideas of the major tourist draws for the coming holiday season on the Continent.

Belgium—Star Attraction

As already mentioned in *The Autocar*, the big attraction of the Continent this year is the great World Exhibition at Brussels, which is running right through the summer to 19 October. It is proudly claimed that "this year on your holiday in Belgium you can see the world."

Among the many other features of Belgium for the tourist are the famous zoo at Antwerp, the seaside beaches of Blankenberge, Heist-Duinbergen, La Panne, Knokke-Zoute, Ostend and Nieuport, and the art town of Malines.

You may visit the ancient Cathedral at Tournai or, between Namur and Dinant, the underground grottos of Han (the largest in Europe), Rochefort and Dinant. At Dinant-Montfort one can take the chairlift to the tower of Mont-Fat (360ft above the river Meuse). Lustin is a beauty spot on the Meuse Valley, and there is another chairlift on the Meuse—the fastest and most modern in Belgium—at Namur. At Trois-Ponts, two miles south-west of Stavelot, there is a wild life exhibition, showing all the animals of the Ardennes in their natural surroundings, and the 25 miles' panoramic drive through the picturesque countryside of Trois-Ponts is not to be missed.

In Germany the Black Forest and the castles of the Rhine Valley are favourite touring grounds, and they are supplemented by a long list of fairs, exhibitions, concerts, folk festivals and other social events to be held during the summer. The champagne festival of Eltville-on-Rhine will be held on 5-7 July, and in the middle of the month will be the illumination of the gardens on the Enz at Wildbad in the Black Forest. From 21 June to 23 August the Mozart festival will be held in Augsburg, and another important event is the wine festival and storming of the Winzingen Gate at Neustadt (28 June to 6 July).

Munich celebrates this year its 800th anniversary, and exhibitions, pageants, theatres and concerts will run through the season from 13 June until the end of September. Other 800th anniversary celebrations will be held from 3 to 7 July at Winsen-on-Luhe, and the 1,200th anniversary of Londorf will be celebrated from 4 to 7 July.

In Switzerland, there is so much to see that time alone is the factor. A drive over some of the splendidly engineered passes is thoroughly worth the petrol consumed, even if they do not form part of the itinerary. Possibly the best Swiss mountain circuit is the famous Susten-Grimsel-Furka triangle. Places like Interlaken, Lucerne, Lausanne, Lugano and Locarno are beautiful lakeside beauty spots; and other Swiss towns and villages may be noted for certain of the long list of events in the Swiss calendar for this year.

There is the rose festival at Weggis (21 June), the Grimsel summer skiing race at Meiringen (22 September), the Yehudi Menuhin musical festivals at Gstaad from 25 July to 6 August, and the international festival of music at Lucerne from 13 August to 10 September. The international yachting regatta week at St. Moritz will be from 3 to 10 August, and 15 to 18 August are the dates of the Geneva festival (flower processions, folk songs, dances and so on).

In Yugoslavia the Amphitheatre at Pula, the excavations of Stobi, the Zveti Donat at Zadar and St. Euphrasius's Basilica at Porec are but a few of the chief tourist attractions. Folklore and tapestries are popular features of Yugoslavia, and the summer plays in Dubrovnik have become an internationally recognized festival of drama, opera, ballet and music.

Almost every day this year until the end of September will run the internationally famous Salzburg Palace Concerts, start-

Left, Berlin film festival; above: Salzburg festival; right: Lumière on the Chenonceaux Chateau of the Loire

R THERE . . .

. . . Look For Attractions On the Way

ing at 9 p.m. on most evenings. In the south of Austria is the Alpine lake bathing resort of Millstatt-am-See, Carinthia, and a building of special interest is the Austrian Army Museum in Vienna. The Kanzel railway at Carinthia, and the chairlift of Puchberg-am-Schneeberg are favourite features; others are the ice caves at Dachstein, and the Bregenz festival.

French Plans Unaltered

Judging by the reactions of other travellers, anyone who has had doubts as to whether it is still wise to go to France following the recent upsets may rest assured that tourists will not run into any difficulties. There have been very few cancellations on either sea or air passages reserved by tourists going to or passing through France this year. The worst that would be likely to happen seems to be a shortage of petrol, but there have been guarantees that tourists will not be stranded if the troubles worsen, which now seems improbable.

Brittany, Corsica, Aix-les-Bains and the Loire Valley are some of the favoured centres apart from the Riviera. A very good guide to the Chateaux of the Loire has just been published (see opposite), but apart from these famous sights—of which one of the most popular is possibly the floodlighting of Chenonceaux at night—there is a wealth of special events planned for the summer season. From 3 to 17 August the fountains at Seine-et-Oise, Versailles, will be in full play, and another Versailles occasion will be the night fête on 3 August.

A folklore event is the Fête of the Queens of Cornouaille at Quimper (24 to 27 July), and an important date in July is the celebration throughout France of the national fête day on the 14th. The international amateur film festival will be held in Cannes from 6 to 16 September, and the international fair at Marseilles will run from 13 to 29 September. The Fête of the Blue Fishing Nets is another folklore event—Concarneau, 24 August. The Night of Elegance fireworks display at Evian (12 July), the mid-July festival of musical and dramatic art at Ajaccio, and the procession of the Passion in Roquebrune (4 August) are other important events of the French season. Monday, 14 July—Bastille Day—usually brings an outstanding firework display at Nice.

Among the best known of all the Italian showpieces is probably the famous leaning tower of Pisa Cathedral, but there are many other targets for tourists in Italy. The ruins of Pompeii are a popular attraction, and there is the almost equally famous Basilica of S. Antonio at Padua. In contrast, it is worth while if you are heading for the Italian Riviera to make a diversion to Monza, where for a small charge you may visit the circuit. Between race meetings Monza performs a similar function to MIRA—the British Motor Industry research centre—as a proving ground for the industry, and if you are lucky you may watch cars being tested at high speeds on the banked circuit; and a meal can be obtained there.

Spain and Portugal are the only European countries for which British visitors are still required to take a carnet, but this is unlikely to have too serious an effect on their tourist industry this year, and a full programme of summer events is planned for both countries. Long lists of folklore dances, festivals, firework displays, bull fights, and other festivities are available from the tourist offices. Luxembourg also has a full calendar: typical events are the fireworks display on the river Sure at Echternach, 21 July, the annual fair in Luxembourg (23 August to 6 September), and numerous grape, wine and cherry feasts.

The events which have been mentioned serve only as a sample of the cream of the terrific variety that is planned to take place all over the Continent. By applying to the relevant tourist office full details of them can be obtained; in each case you should ask for the list of summer events for the tourist.

TOURIST OFFICES

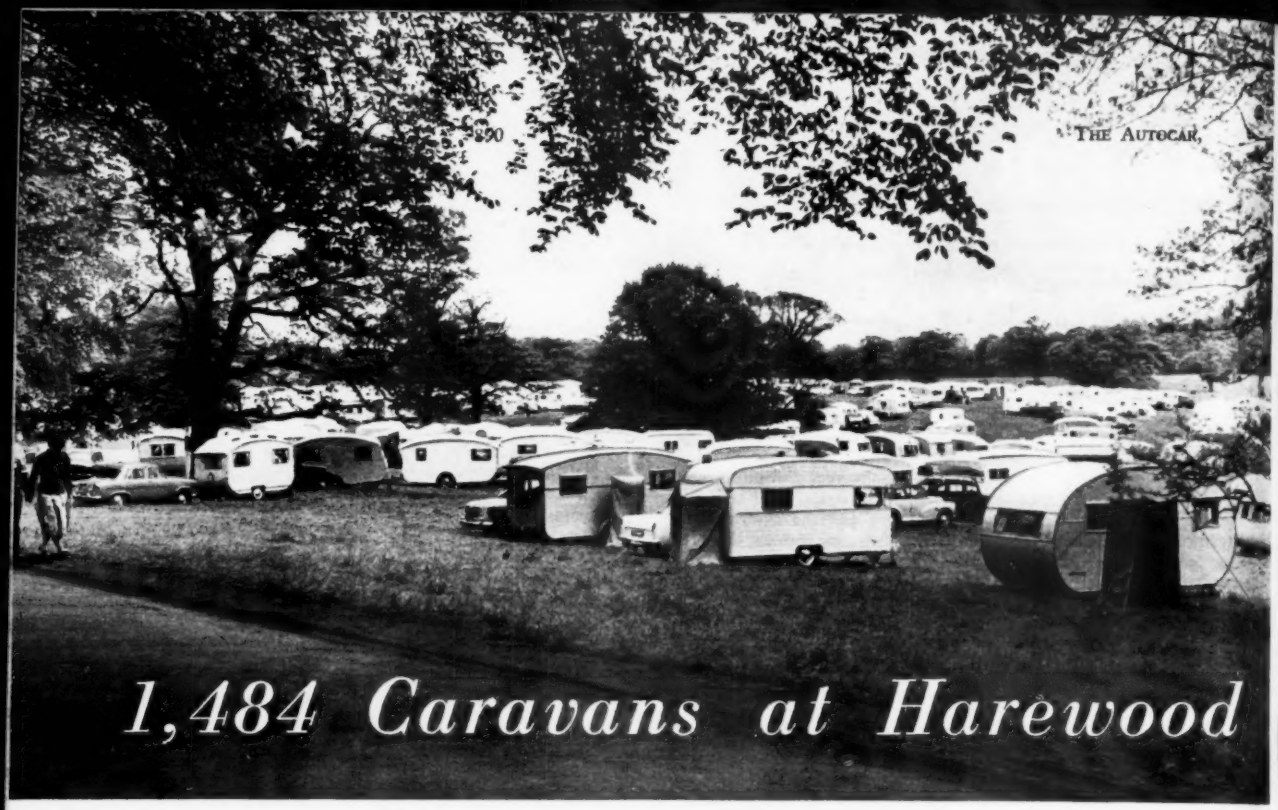
HERE IS THE COMPLETE LIST OF TOURIST OFFICES IN LONDON, WITH TELEPHONE NUMBERS IN BRACKETS.

AUSTRIAN State Tourist Department, 219, Regent Street, W.1. (REGent 3446).
BELGIAN National Tourist Office, 167, Regent Street, W.1 (REGent 1492).
National Travel Association of **DENMARK**, 71-72, Piccadilly, W.1 (HYDe Park 5621).
FRENCH Government Tourist Office, 178-180, Piccadilly, W.1 (HYDe Park 7177).
GERMAN Tourist Information Bureau, 6, Vigo Street, W.1 (REGent 2600).
NETHERLANDS National Tourist Office (A.N.V.V.), 38, Hyde Park Gate, S.W.7 (KNIghtsbridge 6781).
LUXEMBOURG National Tourist Office, 38, Parliament Street, S.W.1 (TRAfalgar 1176).
NORWAY Travel Association, 20, Pall Mall, S.W.1 (TRAfalgar 6255).
Casa de **PORTUGAL**, 20, Lower Regent Street, S.W.1 (WHItehall 4671, 7149 and 1611).
SPANISH National Tourist Office, 70, Jermyn Street, S.W.1 (WHItehall 8578).
SWEDISH National Travel Association, 52-53, Conduit Street, W.1 (GERrard 7170 and 7179).
SWISS National Tourist Office, 458, Strand, W.C.2 (WHItehall 9851).
YUGOSLAV National Tourist Office, 143, Regent Street, W.1 (REGent 5243).

Latest Touring Books

IN THIS LIST ARE GIVEN THE FIRST BRIEF DETAILS OF SEVERAL RECENTLY PUBLISHED TOURING BOOKS, OF WHICH REVIEWS HAVE NOT YET APPEARED IN *THE AUTOCAR*.

This is Yugoslavia, by Cas Oorthuys. Published by Faber and Faber, Ltd., 24, Russell Square, London, W.C.1. Price 7s 6d.
Gateway Guide to Paris. Published by Methuen and Co., Ltd., 36, Essex Street, Strand, London, W.C.2. Price 3s 6d.
Gateway Guide to Spain. Published by Methuen and Co., Ltd. Price 3s 6d.
Introducing Germany, by Michael Winch. Published by Methuen and Co., Ltd. Price £1 1s.
Going to Russia? by Kathleen Taylor. Published by Lawrence and Wishart, Ltd., 81, Chancery Lane, London, W.C.2. Price 13s 6d.
The Holiday Beaches of Northern France, by Dawson Gratrix. Published by Herbert Jenkins, Ltd., 3, Duke of York Street, St. James's, London, S.W.1. Price 15s.
By Road to Turkey, by Robert Bell. Published by Alvin Redman, Ltd., 107, Jermyn Street, St. James's, London, S.W.1. Price 15s.
Chateaux of the Loire (English Edition). Published by News Chronicle Book Department, 12-22, Bouverie Street, London, E.C.4. Price 12s 6d.



1,484 Caravans at Harewood

RECORD ATTENDANCE AT GOLDEN JUBILEE RALLY

NO fewer than 1,484 vans arrived in the grounds of Harewood House over the Whitsun holiday in celebration of the Caravan Club's golden jubilee; at one period they were arriving at the rate of 25 per minute. The 100-acre site was made available by the kind permission of H.R.H. The Princess Royal and the Earl and Countess of Harewood.

It is no small task to organize such a rally—the largest ever held, anywhere—especially bearing in mind the fact that nearly all the officials were unpaid members of the club. Such a gathering requires big marquee accommodation for functions, a row of well-stocked canvas shops, water laid on at over a dozen points, and extensive sanitary arrangements. Everyone who worked under the rally chairman, L. G. Priest, is to be congratulated.

The opening ceremony was performed by Lord Bolton who, with Lady Bolton, was welcomed by W. P. Stote, acting in his new capacity as chairman of the club. Lord Bolton is an old friend of the Yorkshire Centre of the C.C., and in a knowledgeable speech he emphasized the freedom enjoyed by caravanners. As he declared the rally open the C.C. flag was hoisted—in the inverted position, accompanied by hoots of laughter.

A feature of the rally was the interest shown in Continental caravanning. Some excellent travel films were shown to crowded audiences and, in a special section of the rally ground set apart for "Continentals," a bureau manned by experienced members answered the questions of would-be travellers. This section was decorated with the appropriate Continental traffic signs.

Whit-Sunday had a full programme, starting with a church service in the marquee, at which the Bishop of Ripon gave the address. Next came a competition for the Harris cup, intended to test the ability of drivers to reverse their outfits accurately and quickly in restricted areas. Against the clock, drivers had to go forward and turn right into a narrow, marked path. From this position the caravans had to be backed out over the ground already covered and then, still in reverse, driven into another narrow opening on the blind side. Out of over 60 competitors, E. W. Barrett with a Morris Isis/Car Cruiser outfit put up the best performance.

An amusing incident was the excellent performance put up by two sisters, Daphne and Linda Spriggs, driving their father's Land-Rover/Alperson 14 outfit.

Left: L. Bartlett parking his Humber Hawk/Eccles outfit in the "narrow lane" on his blind side in the Harris Cup competition, without the help of a navigator. Right: Young old hands. Daphne Spriggs acts as navigator while her younger sister Linda reverses their father's Land-Rover/Alperson 14 in the Harris Cup competition

Both did extremely well whereas their father, who taught them to drive, failed. Although so competent, neither of these girls is old enough to take a van on the road—their experience has been gained in farm work.

Sunday afternoon was devoted to a general discussion on items of interest to caravanners; inevitably the subject of the general 30 m.p.h. limit on outfits came up. Some thought it best to leave matters as they are and not attract police attention, others thought that any increase of speed granted would entail further red tape. The club secretary, Donald Chidson, was in favour of a more pugnacious approach to the subject, and one member asked that the club at least should ask for an increased speed limit for vans fitted with independent braking systems. Most of the other subjects discussed were of a domestic nature.

The club chairman mentioned that next year's National Rally would be held at Woburn Park, and that the International Rally, also to be held in Britain in 1959, would take place somewhere south of the Thames but not, as had been hoped, at Windsor.

During the rally there were a number of competitions; of particular interest was that for the best towing arrangement, which was won by W. H. Bamkin, who tows a Charnwood with his Armstrong Siddeley Sapphire. He has designed and built a rubber-mounted cantilever extension on the tow-bar, and this, he claims, does away with pitch almost entirely and insulates the car from all contrary movements of the van.

Second in this competition was A. R. Myles, who is renowned for his long-distance towing. He was demonstrating the American "Easy Tow" attachment. This, when in position is, in effect, an extension of the car chassis, turning the outfit into a six-wheeled articulated vehicle. A strengthened tow-bracket carries the usual ball and two articulated spring-steel links, each of which terminates in a short length of chain. Hinged to the tow-bar are two arms, on to which the chains are hung before the arms are raised over top dead centre. The two spring links are hinged at their points of attachment to the tow-bracket, and this feature, together with the flexibility provided by the chain links, provides sufficient movement to allow for angular differences between the car and van. Designed originally for use with the long and heavy vans used in the States, which often have a nose-weight exceeding 6 cwt, the "Easy Tow" should be comfortably able to cope with the loads general in Britain.

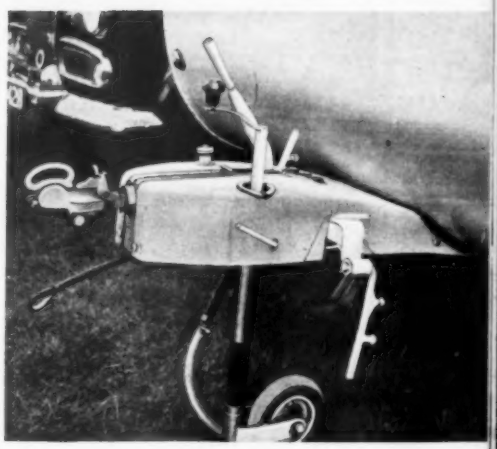
Outstanding in the competition for amateur-built vans was one by E. J. Law, principally intended for long-distance touring. He displayed it on tow by a 1½-litre Riley; to keep down wind resistance, headroom has been kept to a minimum, and the front been cut away to provide an ultra-close coupling with the towing car. The general outline was a pleasant streamline shape, with rear door, and one can imagine some fast miles being put in by this outfit on the Continent.

Some other prize winners were also showing devices with motoring interest. G. Wood had a simple puncture warning device on his Cheltenham Deer—it comprised two sprung metal plates hung from the axle in such a position that they would scrape the road and give warning by the noise if a tyre began to deflate. K. B. Jones showed an extra battery in his Berkeley, with switch gear to cut out car rear lights and winkers when those on the van are in use, and to allow the battery to be charged by the car dynamo.

Those who fear that caravans are fragile and "unweatherworthy" should see the Winchester shown by R. E. H. Fisher, to win the first award for veteran vans; built in 1938, it still had even the same carpets, cutlery and glasses in use.

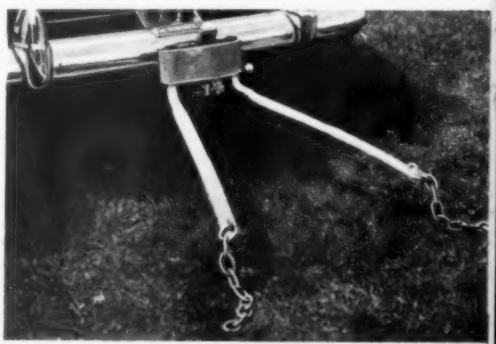
At such a large gathering of essentially mobile caravanners, it is interesting to see which makes are the most popular. Of the many varieties at Harewood, there were 136 Eccles, 128 Fairholmes, 87 Cheltenhams, 77 Car Cruisers and 67 Alpersons. This is a good indication of their popularity in their price ranges, but, of course, there were many others which expressed their owners' individual ideas and depth of pocket.

J. Y.



Tow-bar half of A. R. Myles's "Easy Tow" device showing the two hanging arms to which the chains are attached. The further arm is raised above top dead centre

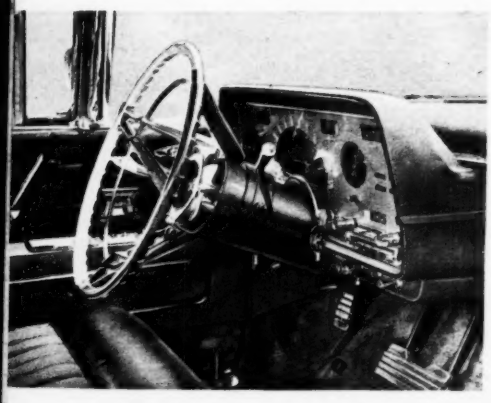
Left: Designed and built especially for long-distance touring—the amateur-built van by E. J. Law. Right: E. W. Barrett, winner of the Harris Cup, after reversing into the marked lane. In addition to its fast time, the outfit was very accurately placed



Right above: Tow-bracket half of the "Easy Tow" showing the two spring links and their attached chains. Right below: W. H. Bamkin's rubber-sprung, cantilever tow-bar. The hanging pipe is for independent vacuum brakes

Absolute

Above and opposite: Flared head lamp cavities and extravagant treatment of the Continental's bumpers and wheel-arches contrast with a neat and simple radiator grille. The back window's unfamiliar angle accentuates the length and expanse of the rear deck



Doing things in a big way is an American characteristic; here one searches in vain for a turn-and-bank indicator, compass or altimeter

A Quick Look at the Lincoln Continental Mk III

TO generalize, the more you pay for a car these days, the simpler it will be to drive, once you know the ropes. That is broadly true of the new Lincoln Continental. It has all the modern aids that one associates with the transatlantic product—automatic transmission, powered steering and brakes, and even a self-starter which without driver intervention brings the engine to life again if it should stall (a feature, incidentally, of Rovers and Standards over 20 years ago). There are little lights to remind you about the hand-brake left on, the doors unlocked, the luggage boot swinging open, and so on.

Thus, however the multiplicity of subsidiary controls in this monster might at first appal you, you could move it; yours is not the predicament of the man who looks after the boats on the Serpentine, were someone to hand him the keys of the *Queen Mary* and tell him to drive it to America.

But there is more to a Lincoln Continental than this, and it is a sad waste of the car only to *drive* it. After all, you will live part of your life in it, so you should study the equipment installed for your comfort and that of your passengers. It would be wise, therefore, to take delivery of its instruction manual a few weeks before the new car arrives outside your front door, to learn something about it in the meantime.

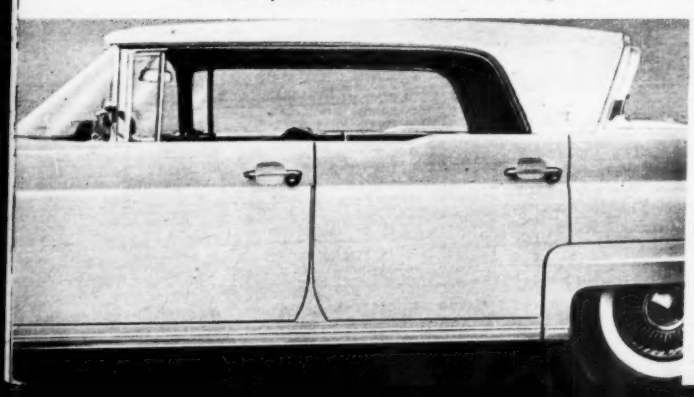
With this ship, the driver is very definitely the captain. From a cluster of switches recessed in the door by his left hand, he can raise or lower all the passengers' side windows—and even the oddly-raked rear window, too—whether they like it or not, and can even lock all their doors by means of an electric switch. To keep his left foot from wasting away through idleness, there is a pedal-operated parking brake with toe release, a head lamp dipping button, and a foot control to set in motion the automatic signal-seeking mechanism of the radio.

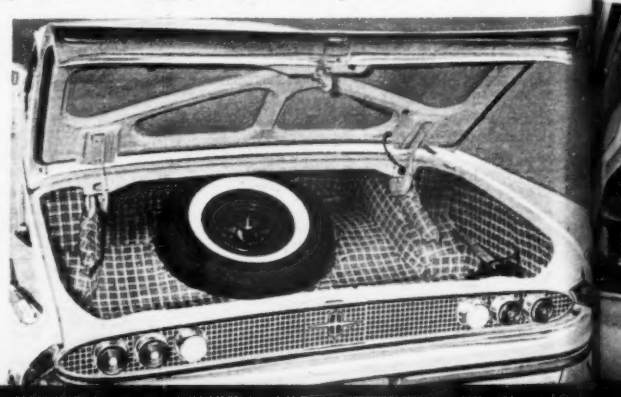
To the left of the bench-type front seat are three little electric switches with which to move it forwards, backwards, vertically upwards and downwards, and even to tilt it by raising or lowering the front or rear of the cushion. The only manœuvre that cannot be achieved is to alter the rake of the backrest relative to the cushion.

By pressing a button below the instrument panel, all the steering and suspension joints are lubricated by a powered system, and a green light in the panel is illuminated when the operation has been completed. Oil for this is contained in a replaceable canister beneath the bonnet.

Naturally, air-conditioning plant is available for the Continental, but it is not a standard fitting. It must be remembered that the current version is neither so expensive nor so exclusive as the hand-made Mk II of last year, which was listed in this country at £4,900 basic (£7,351 7s with purchase tax), and was made only as

Above: Rear seat passengers will be jealous of the multiple electric adjustments provided for those in the front, and they have nowhere to stow their incidental travelling impedimenta. Left below: On this Landau *version there is no centre door pillar above the waist. In outline the new roof contour and screen pillars revert to ancient custom. Right below: Pride of place in the vast luggage compartment is given to the spare wheel*





e American

a two-door coupé. Now the range has been expanded to include all the familiar Lincoln body styles—two-door coupé, four-door pillarless landau, four-door sedan and two-door convertible. The car illustrated is the four-door landau and is priced, including its extra equipment, at £3,628 basic—£5,443 7s including tax.

Perhaps the Lincoln would have been named more aptly Transcontinental, for its capacity for passengers and luggage would be ideal for transporting one or more families from, say, New York to Los Angeles, in superb and effortless comfort —a gasoline-fired magic carpet if ever there was one.

Yet on such a journey there would be one oft-repeated irritation and source of anxiety; for the Continental, which might be expected to cover 12 to 16 m.p.g. depending on its load, the terrain and manner of driving, carries only 18¼ gallons of fuel. Thus, in covering the 2,911 miles from New York to Los Angeles one would need to refuel perhaps 12 or 14 times, and watching the fuel gauge needle would become something of an obsession.

There would be room to stretch out almost full-length and sleep in the luggage boot, in which the spare wheel is housed so far forward that one can scarcely reach it; no wheel cover protects suitcases from rubbing the dirt off it, and in addition most of the luggage would need to be removed to get at it. Thus a wheel change on a wet night with a full boot would be something of a nightmare, and both driver and luggage would become wet and dirty in the process.

Also, despite the car's spacious living-room, there is precious little stowage space for all the maps and other oddments associated with long-distance travel. A small, hinged tray in the facia panel has to be lowered every time you wish to use the compartment, and there are no door pockets. In the front, this is because heater ducts in the forward door pillars connect with mating ducts built into the front doors, to pass warm or cold air to the rear compartment—a neat and practical arrangement.

The upper surface of the enormous windscreen, which has two-dimensional curvature, is tinted green to reduce sun glare, and there are, in addition, flexible sun visors for driver and front passenger. In fact, there seems to have been considerable thought concerning the safety angle, and seat straps are, of course, optional equipment. In addition to the internal mirror, there is another on the outside of the driver's door, its angle controllable from inside the car.

Seat trim is in fine quality nylon cloth and supple leathers from Bridge of Weir, Scotland, over foam rubber cushions and the front seat—should one say sofa? —is extremely comfortable, although lacking any central support wherewith to counteract side forces. The rear squab has a wide, folding armrest, but neither its upholstery nor its angle offers the relaxed comfort associated with British specialist coachwork. Very thick pile carpeting and a particularly attractive pierced plastic roof trim add to the sense of luxury—indeed opulence. In detail finish one could find better on some of our smaller cars in large-scale production.

During a brief, pre-delivery run with a member of the test staff of Lincoln Cars, Ltd., of Brentford, I was impressed by the level ride on admittedly main road surfaces, and there seemed to be a marked resistance to roll, although for obvious reasons the car could not be driven hard or cornered fast. There is, in fact, a hefty anti-roll stabilizer bar allied to the coil-and-wishbone front suspension.

The Lincoln range of cars now all have unit body and chassis structure—the world's largest examples of this constructional principle. In America they are available with air springs, but at present all export cars have coils at the four corners, those at the rear in conjunction with a Panhard rod and long trailing arms, splayed outwards from a bracket on either side of the propeller shaft to attachments well outboard on the axle side tubes. A limited-slip differential is fitted.

Very little shake was detected in the body structure on good road surfaces, but the waist-high central door pillars spring appreciably when a door is slammed. There was none of the exhaust throatiness experienced with some of the large American vee-8s, nor was the 7-litre engine other than very remotely heard or felt under full throttle—a remarkable feat considering its gross rating of 375 b.h.p. The three-ratio Borg Warner transmission has two Drive selections—Dr 1 and Dr 2. With the former, all three ratios come into use for full accelerative powers; with Dr 2 only the upper two are in circuit.

On this particular example the middle ratio was noisier than expected, but it had scarcely bedded in and doubtless would quieten with further use; its changes were discernible, but only just. Further comments on the Continental's dynamic qualities must await a full road test or a longer acquaintance with the type.

In sheer bulk the Lincoln—over 19ft long and 6ft 8in wide—is at a disadvantage in dense traffic, whilst in country lanes it needs to be handled with such caution as a motor-coach driver would exercise. Yet despite the great spreads of bonnet and rear deck, it does not feel quite so large inside as it looks outside. Unfortunately for prospective U.K. buyers, the make is not manufactured with right-hand steering.

If you are an ordinary middle-class mortal, you descend from this giant almost with the relief of one who has been embarrassed by failing in an attempt to live above his station; besides, it is so large that you, too, need to be large to keep in æsthetic proportion. Nevertheless, it provides a motoring experience which is not to be missed, so if your next-door neighbour has one, perhaps he will oblige.

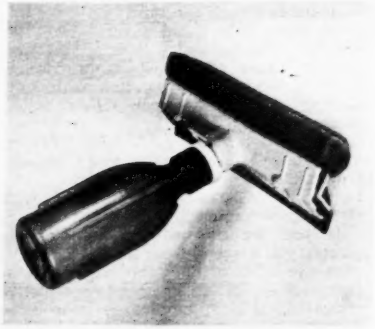
Left : A forbidding array of power control and other mechanisms limit the engine's accessibility to the servicing mechanic. Right : Much bright metal has been concentrated at the rear; the back window can be raised and lowered from the driving seat, and the boot lid catch also is electrically released by the driver. A four-digit registration is needed to fit that small recess in the bumper

A wide draught and rain deflector, and a new mesh vizor for Vauxhalls. The strips forming the mesh are angled to keep hot sunshine out of the car

Accessories

A long-arm Lucas mirror

Registration - number and owner's name key fobs



A Brenner device which is a complete windscreen valeting outfit

The small Alverton tyre inflator, with its case

Mesh Vizor

A VERSION of the Spartovizor for Vauxhall Velox and Cresta has been introduced. This vizor uses steel in a diamond-mesh pattern made from expanded sheet metal, the strips forming the mesh being so angled as to stop sunlight. The makers are London Bankside Products, Ltd., The Runway, South Ruislip, Middlesex, and the price is £3 17s 6d. The vizor is zinc-coated, then painted in primer, ready for the agent to apply matching body colour.

A mesh vizor should in theory reduce the wind resistance which results from large fittings on a car.

Key Fobs

A NEW car key ring has a fob of either pigskin or morocco leather, with an ivory plastic tablet, having a transparent face. With this are strips of white on black letters and figures, so that the correct registration number of the car may be inserted. This costs 2s 6d.

Another version (1s 6d) has a small tablet for the owner's name and address.

The distributors are B. Pearlman and Co., Ltd., 30, Salusbury Road, London, N.W.6.

Long Spring-mirror

THOSE who tow caravans often need a long mirror, but as this will project beyond the car, it should be of the spring-loaded kind that folds back when bumped, and then returns to its original position. A new Lucas commercial model, the 683/118, with a 10-in arm, might fill this need, though it is finished in black, not chromium. The price is £1 7s 6d. A model with 6-in arm, the 683/119, is £1 6s 6d.

Tyre Inflator

SMALL electrically powered compressors designed for tyre inflation and light spraying have long been a product of the Alverton Engineering Co., Ltd., Copthall House, Copthall Avenue, London, E.C.2, under the trade name Mopal. Tests have been of the latest model, which is available for 6- or 12-volt operation from a car's own batteries, or for A.C. mains supply. It has long leads with crocodile-clip battery connectors, and an accurate gauge, reading up to 50 lb sq in, is fitted in the pressure hose.

A 12-volt model, connected to a 6.00-16in car tyre which showed only 10 lb sq in pressure, inflated it to 15 lb sq in in one minute, 17½ in 2min, 20 in 3min, 22½ in 4min, 25½ in 5min and 28 lb sq in in 6min. At the outset it took 3 amp from the battery, falling to 2.9 amp towards the end of the test; the makers claim a more conservative average figure. The compressor may be used with a spray gun, using a tyre as air reservoir. There is also a rotating joint wheel attachment by which the compressor keeps a not-too-badly punctured tyre inflated to 30 lb sq in whilst the car is driven home or to a garage. Prices are: Compressor kit with gauge £14 10s, spray gun and adaptor £4 10s, "get-you-home" universal joint equipment £3 10s.

Screen Cleaning

THE screen-cleaning gadget of L. F. Brenner must be one of the most complete things of its kind. One side of the head is a hard rubber blade, the other synthetic foam sponge, and the handle is a plastic squeeze bottle which can squirt at the glass water or detergent, or methylated spirits used for de-icing. It is neatly made, and costs 10s 6d.

The address of L. F. Brenner, Ltd., is 235, Halfway Street, Sidcup, Kent.

Wide Deflector

A POWERFUL draught and rain deflector, extending well out from the window opening of a car, is introduced by W. J. Cransie and Co., 6-10, Chandos House, Buckingham Gate, London, S.W.1. It is called the Cyplas Cyclone, and the price is £1 19s.

The device is shown in an illustration. The exact arrangement of fastenings varies according to make and model of car. The strong Perspex is 5½in wide in the forward-facing panel, so that on some models it would project a little beyond the bodywork.

Built-in Soap

IN a new car sponge, Supreme Agencies (Leeds), Ltd., Bren-Ge House, 17, Neville Street, Leeds, 1, incorporate two buried blocks of solid detergent. When the sponge is used, a lather is produced. The blocks should last a long time. The Self-Lather sponge, which costs 4s 11d, is 6in by 4 by 2in, dry.

The Autocar's enquiries about the detergent used proved satisfactory. It is of the harmless kind, and was adopted by the makers after proper consultation with the chemical companies. The occasion serves to warn readers against the indiscriminate use of household detergents on cars. Some of these are unsuitable, and may have a strong bleaching action.

The 3.4 is exceptionally low for a large-engined, four-five seater. The bumpers and overriders are of robust construction, and there is protection round the corners. Wire wheels are available at extra cost

The Autocar ROAD TESTS 1687

Jaguar 3.4

IT is no exaggeration to describe the 3.4-litre Jaguar both outright and in terms of value for money as one of the most outstanding cars in current production anywhere. During the weeks in which one of these models has been in *The Autocar's* hands, a period covering more than 2,000 miles in the United Kingdom, France and Belgium, the car's remarkable capabilities impressed in ever-increasing degree. Like its 2.4-litre stablemate, the 3.4 is seen at its best on long journeys, and during the test it made such runs repeatedly without fuss at extraordinarily high average speeds.

To some extent the car's showing proved contrary to the expectation resulting from experience of the 2.4. While the latter had proved to be an excellent and fast car, its handling characteristics at very high speeds gave to the driver some indication of the nose-heavy weight distribution. On paper the additional weight of the 3.4 engine and its extra speed potential did not point entirely to all-round improvement. However, a number of minor modifications to the suspension have collectively helped to make the 3.4-litre not only one of the fastest cars on the road but additionally one of the most stable—a car, in fact, to complement the best of a driver's skill.

The model tested was fitted with overdrive on top, giving a highest gear of 2.9 to 1 with a normal top of 3.8 to 1; on the standard car top is 3.5 to 1. Also fitted were disc brakes—available at an extra cost of £36 15s—which proved to be well worth this additional modest outlay.

All Jaguars have a reputation for quality and for a high standard of passenger comfort, but consideration of the 3.4 is dominated by the exceptionally high journey speed capability which is owed mainly, of course, to its high acceleration and top speed. From a standstill the car can reach 100 m.p.h. in 26 seconds, going on to 110 in 34.6 and to an all-out maximum in top of 119 m.p.h. and in overdrive of 121. Maximum r.p.m. (6,000 is permitted for short periods) cannot be reached in overdrive, with the result that cruising speed in this high ratio can be what you care to make it up to the maximum.

The attractiveness of the car's behaviour covers an exceptionally wide field. As a town carriage it has few peers, while on fast journeys the model's achievement more closely resembles that of the sports racing car than the high performance family saloon. The very high rate of acceleration available does not fall off appreciably until after 100 m.p.h. is exceeded. The throttle linkage and engine characteristics enable any driver to use the car for pottering about without fear of being carried away, yet when the throttle is opened wide the performance character changes excitingly.

When making fast getaways in first gear the limiting factor is wheelspin. However, the clutch take-up is smoothly progressive, and the driver can soon find the best balance between throttle opening and drive take-up. This achieved, the car reaches 30 m.p.h. in as little as 3.1sec, 50 in 7.0, 70 in 12.4 and 90 m.p.h. in 20.5sec. The standing quarter mile takes 17.2sec. Acceleration is aided by a fine choice of ratios, giving maxima of 36, 67 and 97 m.p.h. on first, second and third respectively. A maximum power output of 210 b.h.p. at 5,500 r.p.m. is standard, but it has not been provided at the expense of flexibility; the 3.4 will pull away in top smoothly and firmly from speeds of less than 20 m.p.h.

A feature of this twin-overhead camshaft engine is its lack of fuss. At maximum speed, while wind noise is not distracting when the windows are shut, the engine can scarcely be heard. At lower speeds, with correspondingly reduced wind noise, a pleasant, subdued boom results from

The 3.4 litre is distinguished by having sixteen thin ribs in the grille, compared with a lesser number of wider struts in the 2.4

Jaguar 3·4 . . .

From the rear the 3.4 is recognized by twin exhaust tail pipes at the right-hand corner, instead of the single pipe used on the smaller-engined car

wide throttle openings in the intermediate ratios. There are no rough periods and the engine note is never obtrusive. The automatic choke takes care of cold starting efficiently; hot or cold the engine fires at once, and the choke goes out of action quite quickly after a cold start. There is some of the rich mixture "hunting" associated with automatic chokes, but the mechanism may be cut out simply by switching off momentarily.

Response to throttle opening is instantaneous, but the linkage was not so satisfactory on the car tested when the pedal was released. The slow running speed became much too high after a few days' use, the normal 600 r.p.m. being assumed in traffic hold-ups only after a sharp jab at the throttle pedal.

The gear box and its central, floor-mounted lever arouse mixed feelings. The mechanism as a whole is much better than the average of manual systems, yet two improvements would be welcome. The knob on the lever is too far away, to the extent that a driver of average height has to lean forward to make a change. A longer lever cranked a couple of inches or so rearward would be preferred, even though the control's present position permits an occupant at the front to slide across from one seat to the other.

Action of the synchromesh falls short of the standard of the rest of the car. First and second ratios are not always easy to engage when the car is at rest, and quick changes may be accompanied by a grinding noise unless careful and accurate double declutching is employed. Ignoring sound effects and the long reach, the mechanism is precise and pleasant to use. Automatic transmission is available as an alternative at extra cost.

First gear is noisier than would be expected in a car of this class, and there is some singing on second and third. Top is completely silent, and there is no noise from the remainder of the transmission. Also there is no vibration in the transmission, either in the propeller shaft or at the gear lever. A curious fault to develop, particularly at low mileage, was fan-belt slip even after all adjustment had been taken up.

The behaviour of the suspension and steering is impressive, although both may be criticized on minor counts. The suspension is particularly well insulated from road noise, and is very well damped. Over humped bridges or the kind of undulating surface which has been christened "long wave pitching" there is unusually little tendency for the car to develop extensive up-and-down movement, even at relatively high speed. Yet there is in the ride a marked reaction from indifferent road surfaces such as uneven cobbles. The effect in these circumstances is suggestive of over-high tyre pressures although this is not, in fact, the cause.

The car is sensitive to tyre pressures, which are recommended to be 25 lb sq in front, 22 lb rear for normal use, 31 front and 28 rear for cruising at 100 m.p.h., and 34 front and 31 rear when maximum speed capability is to be used for long periods. In practice the ride comfort at the touring (middle) settings proved to be very little inferior to that at the lowest pressures, while the lowest pressures detracted from the car's handling characteristics—directional stability was of a lower standard and there was a dead feel to the steering. For all-round roadwork the middle set of pressures seemed to be ideal.

Now fitted as standard are the new Dunlop Road Speed RS4 tyres, manufactured from synthetic rubber. Their grip in the wet as well as on dry roads was satisfactory, although the engine power available in the lower gears could very easily be made to twitch the rear of the car if the road was damp.

The very comfortable, leather upholstered, two-to-three passenger rear seat and the separate front seats, coupled with the suspension characteristics, provide a good ride for all occupants. On corners the amount of roll is slight; there is enough initially to give the driver an indication of the car's speed relative to a corner, with a limit that enables the car to be taken even through breakaway point without excessive tilt. In normal fast driving passengers are at ease, for, unless they are watching the speedometer, speed appears to be very much less than it is in reality, even on corners. It is in part for this reason that the car is sometimes accused of too-easily-provoked tyre squeal.

The steering functions extremely well, and the turning circle is only 33ft. At speed on the road the mechanism is responsive. The car can be placed accurately even at exceptionally high speeds on indifferent surfaces, and the amount of kick-back is not excessive. The self-centring is unusually pronounced, however, with a by-product of

Baggage must be removed from the luggage locker to reach the spare wheel, and also the exceptionally neat tool case. The screw jack is mounted behind the rear seat, and the wheel brace in clips under the base of the rear window

The steering wheel has telescopic adjustment, and is shown here in its forward position. The overdrive switch is conveniently placed at the top of the facia above the driver's glove compartment. The throttle pedal is not well sited in relation to the brake. Each door has an arm rest and pocket

heaviness, particularly as the lock increases. Even at medium speeds appreciable effort is required at the wheel when sharp turns are made, and some fatigue may be caused on long runs at relatively high speed on winding roads. However, lower-geared steering can be specified.

Three inches of adjustment is provided on the steering wheel, and the position of the wheel is unusually good. When as near the facia as it will go, it is close to the driver's knees, yet does not restrict his movements. There is ample elbow room whatever adjustment is selected. Seat adjustment is complementary; it is smooth and easy, the seat being raised as it approaches the wheel, and vice versa.

Judgment of the disc brakes can be made fairly only in relation to the demands which they often have to meet in a car of this nature; the speed is much higher than that of most other models, and the driver unconsciously makes much greater demands on the brakes in the 3.4. Silent and quite light in operation, they are outstandingly good and come into their own particularly at high speeds. (Wheel locking followed the maximum retardation figure of 84 per cent, but this was only from 30 m.p.h.) After periods of hard driving on tricky roads, there was some increase in pedal travel, but the driver at all times could depend on his brakes with complete confidence. It would be a false economy to specify a 3.4 Jaguar without disc brakes. The hand brake, placed to the right of the driving seat, is efficient, and conveniently to hand.

The comprehensive array of instruments and minor controls is admirable, but their location could be improved, for the driver should be able to read his instruments at a glance. Presumably to facilitate the production of right- and left-hand drive cars, they are central. The rev counter is farthest from the driver, and the speedometer is partly obscured by the driver's left hand (on a right-hand drive car). The lever for the turn indicators is far down the steering column where it cannot be reached without removing a hand from the wheel.

Visibility is fair. The windscreen pillars, in conjunction with the frames of the swivelling ventilator windows, are broad, and it is not possible to see the kerb-side wing. Apart from these points vision is satisfactory. The rear window does not wrap round, but is sufficiently large to provide via the mirror visibility of adequate range and width. There is no serious blind spot.

All doors are hinged at their forward edges and close well, but on the car tested some rattles developed within them. The driver has a small, open compartment for oddments and on the passenger side is a lockable glove compartment. Accessories include a cigarette lighter. The front ashtray is on the driver's side of the facia, under the ignition keyhole; it cannot easily be reached by the passenger, and the keys tend to get in the way of the tray and to get dirty from tobacco ash.

Extensive use of polished walnut in the interior, and the choice of hide for the upholstery combine to give an air of traditional luxury to the occupants. Detail fittings include individual vanity mirrors in the rear compartment. The standard of finish as a whole is high, of a character found in the products of few manufacturers outside the British Isles. The luggage locker, rather shallow, is just about of sufficient size to carry a normal amount of holiday baggage, but contents must be removed to get at the spare wheel or the tool kit.

With an overall consumption of 16 m.p.g. in hard driving (and remembering the journey-speed capability of the model) a substantially larger fuel tank would be preferred to the 12-gallon unit now fitted. It has a warning light but no separate reserve.

Surprisingly, the heater is available only at extra cost. Its efficiency could not properly be judged in the temperate weather which accompanied the test. On the assumption that it is better to keep the windows closed to reduce wind noise and buffeting, the ventilation system did not prove adequate, even when the manually operated ventilator intake at the base of the windscreen was open. An appreciable amount of engine heat is transmitted to the interior, and in warm weather the occupants may become undesirably hot.

The unmelodious horns are out of keeping with the model, and their penetrating power was not as great as one would expect in a fast car. The two-speed windscreen wipers proved effective and swept a considerable proportion of the glass. However, they made an unwelcome

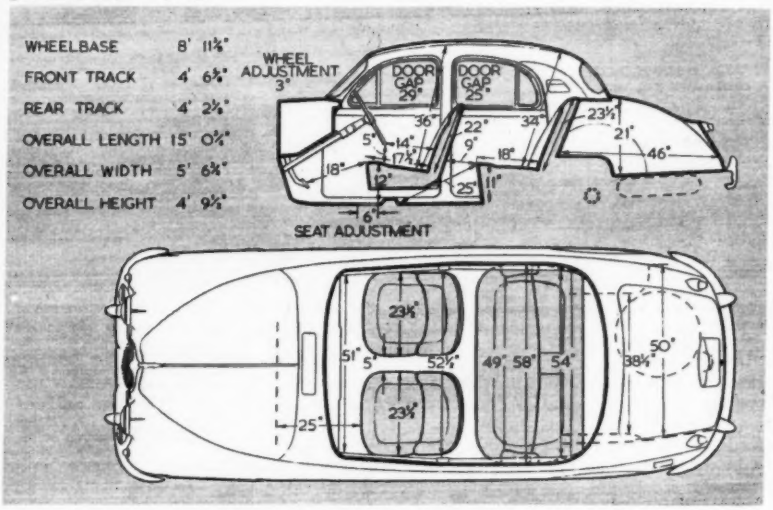
The length of the twin o.h.c. engine is disguised by the broad air cleaner-silencer. Most components requiring regular attention can be reached easily, including the battery, which is mounted on the bulkhead

sound as they reached each end of their arcs. The head lamps are quite adequate for fast driving at night.

Mounted well forward, the large engine occupies most of the under bonnet space. The dipstick is not ideally placed, but most of the components requiring regular attention can be reached without difficulty. The 12-volt battery is mounted under its own lid against the right-hand side of the bulkhead. The under bonnet appearance is impressive, not least owing to the well-polished camshaft covers.

In spite of some minor criticisms, the 3.4 Jaguar emerges as a totally outstanding car. The provision at relatively low cost of this standard of performance, coupled with town carriage docility when required, and of such quality and comfort, is a remarkable achievement.

JAGUAR 3·4



Scale ½in to 1ft. Driving seat in central position. Cushions uncompressed.

PERFORMANCE

ACCELERATION: from constant speeds

Speed Range, Gear Ratios and Time in sec.

M.P.H.	*2.9 to 1	3.8 to	4.6 to 1	6.6 to 1	11.3 to 1
10—30	—	—	6.2	3.7	2.1
20—40	—	7.1	5.3	3.6	—
30—50	9.2	6.7	4.8	3.6	—
40—60	9.8	6.9	5.4	4.0	—
50—70	10.3	7.5	6.0	—	—
60—80	11.5	7.7	6.3	—	—
70—90	13.3	8.5	7.7	—	—
80—100	16.3	9.8	—	—	—

*—Overdrive.

From rest through gears to:

M.P.H.	sec.
30	3.1
50	7.0
60	9.1
70	12.4
80	16.0
90	20.5
100	26.0
110	34.6

Standing quarter mile, 17.2 sec.

MAXIMUM SPEEDS ON GEARS:

Gear		M.P.H.	K.P.H.
O.D.	(mean)	120	193.1
	(best)	121	194.7
Top	(mean)	119	191.5
	(best)	119	191.5
3rd		97	156.1
2nd		67	107.8
1st		36	57.9

TRACTIVE EFFORT:

Pull (lb per ton)		Equivalent Gradient
O.D.	230	1 in 9.7
Top	315	1 in 7.0
Third	390	1 in 5.7
Second	560	1 in 3.8

BRAKES: (at 30 m.p.h. in neutral)

Pedal Load in lb	Retardation	Equiv. stopping distance in ft.
25	0.33g	91.0
50	0.63g	48.0
75	0.84g	36.0

FUEL CONSUMPTION:

M.P.G. at steady speeds

M.P.H.	Direct Top	O.D. Top
30	33.8	38.4
40	31.5	35.7
50	28.6	32.2
60	25.5	29.4
70	23.0	27.1
80	21.3	25.3
90	18.5	23.0
100	17.6	21.0

Overall Fuel Consumption for 2,121 miles, 16.0 m.p.g. (17.6 litres per 100 km.).

Approximate normal Range 15—22.5 m.p.g. (18.8—12.5 litres per 100 km.).

TEST CONDITIONS: Weather: Dry, sunny, light breeze, air temperature 65-70 deg. F. Road surface: Dry tarmacadam. Fuel: Premium grade.

Acceleration figures are the means of several runs in opposite directions. Tractive effort obtained by Tapley meter. Model described in *The Autocar* of 1 March 1957.

SPEEDOMETER CORRECTION: M.P.H.

Car speedometer:	10	20	30	40	50	60	70	80	90	100	110	120
True Speed:	14	21	30	39	49	59	68	77	86	96	104	112

DATA

PRICE (basic), with saloon body, **£1,114.**
British purchase tax, **£558 7s.**
Total (in Great Britain), **£1,672 7s.**
Extras: Radio to choice. Overdrive **£67 10s.**
Disc brakes **£36 15s.**
(Prices include purchase tax where applicable.)

ENGINE: Capacity: 3,442 c.c. (210 cu in).
Number of cylinders: 6.
Bore and stroke: 83×106 mm (3.3×4.2 in).
Valve gear: o.h.c.
Compression ratio: 8.0 to 1 (7.0 to 1 optional).
B.H.P.: 210 (gross) at 5,500 r.p.m. (B.H.P. per ton laden 133.3).
Torque: 216lb ft at 3,000 r.p.m.
M.P.H. per 1,000 r.p.m. on top gear, 20.6.
M.P.H. per 1,000 r.p.m. on overdrive, 26.4.

WEIGHT (with 5 gals fuel): 28½ cwt (3,192 lb).
Weight distribution (per cent): F, 57; R, 43.
Laden as tested: 31½ cwt (3,528 lb).
Lb per c.c. (laden): 1.02.

BRAKES: Type: Dunlop disc.
Method of operation: Hydraulic, vacuum servo assisted.
Disc dimensions: F, 12in diameter; 276 sq in swept area.
R, 12in diameter; 276 sq in swept area.

TYRES: 6.40—15in.
Pressures (lb per sq in): F, 25; R, 22 (normal).
F, 31; R, 28 (fast driving).
F, 34; R, 31 (sustained maximum speed).

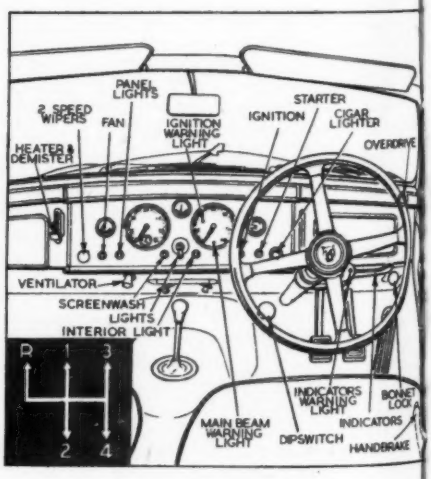
TANK CAPACITY: 12 Imperial gallons.
Oil sump, 13 pints.
Cooling system, 22 pints.

STEERING: Maximum turning circle:
Between kerbs 38ft 9½in.
Between walls 41ft.
Turns of steering wheel from lock to lock 4.

DIMENSIONS: Wheelbase: 8ft 11½in.
Track: F, 4ft 6½in; R, 4ft 2½in.
Length (overall): 15ft 0½in.
Height: 4ft 9½in.
Width: 5ft 6¾in.
Ground clearance: 7in.
Frontal area: 19.5 sq ft (approximately).

ELECTRICAL SYSTEM: 12-volt; 51 ampere-hour battery.
Head lights: Double dip; 42-36 watt bulbs.

SUSPENSION: Front, independent, wishbones and coil springs. Anti-roll bar. Rear, cantilever half-elliptic with live axle.



Disconnected Jottings

BY THE SCRIBE
Barry Appleby Drawings

Red Dazzle

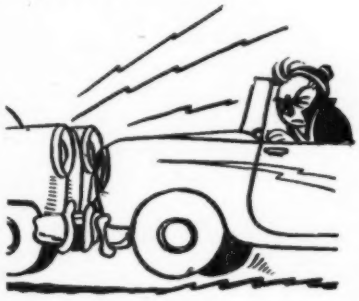
THE position about those over-large, over-bright traffic indicator lamps which so dazzle following drivers at night, is clarified by the Minister's expressed intentions to make regulations affecting new vehicles next year. And the S.M.M.T. has included maximum intensity in its "standards of recommended practices."

But there are a great many existing cars with these dazzling stop and indicator lamps, and it is up to their owners to do something about it. Garagemen could help by making the suggestion. However, as this would involve agents in making criticisms of something done by the manufacturer they represent, I doubt if they will. It is only when a model is dropped and becomes obsolete that "union rules" permit an agent to admit an imperfection.

Bad Fittings

THAT mistake with the over-bright, soup-plate lamps was one of many that could not arise if design staff and their chiefs were experienced motorists. I am sufficiently trustful to believe that nobody would be cynical enough to introduce a dangerous feature if it was realized to be so.

Thick windscreen pillars, bright reflections of the facia in the windscreen at night, sharp and hard objects placed to correspond with the knees and forehead, and slippery seating are other examples of ignorance.



Over-bright

Smoke Signals

LOOKING for some papers on a colleague's desk I noticed and fell in love with a trade-mark—that of Borax Consolidated, Ltd. It seems from the document that borax, both decahydrate and pentahydrate, is an excellent corrosion-inhibitor for ethylene glycol and anti-freeze. It helps to form a resistant oxide coating.

It must be mined somewhere in the West, for this trade-mark is "20-Mule Team." The mules are in pairs, a long string, and they are drawing a waggon with tall, cross-country wheels. Not shown, but instantly filled in by my imagination, are the Apache arrows sticking into the waggon, the escort of United States Cavalry, the Painted Desert, and the trading post where all refresh themselves with red-eye whiskey.

Filled in by imagination

What a wonderful bonnet mascot this miniature waggon and its mules would make. And what a terrible obstruction such an outfit would be if translated, life-size, to a modern main road. There must have been a very good driver to manage twenty mules—a Stirling Moss of the Plains.

Flow

FOR many of the early days of the bus strike, London motorists remained careful to avoid parking at the disused bus stops; I even saw notes being taken by a policeman from a driver who had parked on one. Citizens who wanted lifts made their desires clear by waiting at the disused stops.

I need not comment on the remarkably increased flow capacity of London arteries without buses, for the management of London Transport has admitted it. But there has been little comment on the utter inadequacy of cross-roads controlled by traffic lights for anything but spasmodic traffic, or traffic which is all bound either north-south and east-west, and does not want to make right-angle turns across other streams. The police soon took over cross-roads where congestion was caused and, working in teams, made a marvellous job of chopping up the streams and getting everybody across. Roundabouts were little better.

Expensive Traffic

NOW, the ideal for busy junctions is some sort of fly-over system. But the increase in the height and the length of approach ramps which is necessitated by tall, double-decked buses, must be very great. In fact, the existence of all kinds of very tall, very long, very wide or enormously heavy vehicles does make the provision of new roads and bridges so much more expensive and difficult.

I can think of holiday and weekend spots where thousands of cars may be observed pouring over primitive wooden bridges of pioneer pattern. And I do renew past pleas to the Minister to let us have light duty by-passes and bridges, to relieve the more frustrating bottle-necks of holiday traffic. As I have so often hinted, if the surfaces were sufficiently awful, the owners of cars with inadequate suspensions—a design feature in which this country sometimes lags—would take great leaps up and down . . . until their complaints made suspension designers take a great leap forward.

Runabouts

ALTHOUGH many Americans think nothing of driving a couple of hundred miles to go to the cinema, there are a great number who live in such pleasant places that they have good reason for staying there, unless they visit the congestion of a neighbouring town for shopping. Moreover, in New England and elsewhere, as an American visitor has been telling me, roads are winding and imperfect, so that there seems to be quite a good practical case for a small car; in big towns the easing of parking problems alone is a strong argument in their favour.

One hole, two autos

Floods

I HAVE just been making rather a mess of diagnosis of my engine's bad running. The check of efficiency of the ignition was well done, I think, poking and prodding in all the right places, and I soon knew that fuel supply was the trouble.

Well, I wasted much time looking for all the causes of weak mixture, repeating many examinations and checks, because fuel starvation is a common complaint. Yet it should have been evident at an early stage that the trouble was actually slight over-richness and flooding. It is much less common, and in this case, seems to have no cause or reason. The float chamber and needle valve are fine, the choke in order, all the jets correct, and so on

News and Views

Disqualification Quashed

AN important point concerning penalties which may be imposed in the absence of a person charged with a motoring offence, was clarified in the Divisional Court last week. A driver, who had been fined and disqualified from driving for three months for exceeding the speed limit, had the disqualification quashed. The case had been brought under the Magistrates' Courts Act, 1957, which permits a case to be disposed of in the absence of an accused who pleads guilty by letter. The Act, however, specifically prohibits sentence to a term of imprisonment or any other form of detention, or any disqualification, until the case has been adjourned and the defendant given an opportunity to attend the court. This had been overlooked, and the application to have the disqualification quashed succeeded.

Starting Date for Parking Meters

PRESIDING at a meeting of the Westminster City Council parking meter committee, the mayor, Mr. D. Cobbold, gave Thursday, 10 July as the date when the first parking meter scheme would come into operation in London (in Mayfair).

B.M.C. Appointments

SEVERAL management changes have been announced by the British Motor Corporation. First, Mr. G. W. Rose has been appointed to the board of Fisher and Ludlow, Ltd., as deputy managing director. Mr. Rose was originally transferred from Wolseley Motors, Ltd., to become works manager of Austin after the Austin-Nuffield merger, and he became general works manager in 1955.

Secondly, Mr. J. R. Moore, chief inspector (bodies), has joined Fisher and Ludlow as quality controller.

As a result of these promotions, Mr. W. H. Davis has been appointed general works manager at Longbridge; Mr. R. D. Niven becomes production manager of the cars division; and Mr. C. A. J. Munday has been promoted chief inspector, bodies, at Longbridge.

IN GLOUCESTER, where the London road leaves the city through Barnwood, one of the first of the Accident Black Spot signs (introduced last year) has been erected

Next Week

Enlarged issue containing—

- ★ Details of arrangements, cars, preparations and prospects for Le Mans (21 and 22 June).
- ★ Full report of the European Grand Prix at Spa.
- ★ Road Test—the new Austin-Healey Sprite.
- ★ Background to American entries for the Monza 500.
- * Touring in North Wales with an M.G. A.

American Engines Hotter

AN increasing trend towards the use of higher temperature thermostats on many American models for next year has been reported. Current thermostat settings are 160 deg F on most American cars, but 180 deg thermostats are to be used in future. The low running temperatures of British cars were criticized in Technical Topics (*The Autocar*, 6 December, 1957), and it is to be hoped that the trend towards hotter engines will spread to this country.

Americans Visit Standard Works

THE Standard Motor Company has recently been visited by two groups of American owners of Triumph TR3s. The visits took place after four-week tours of Europe made by the trans-Atlantic drivers in their new sports cars. The tourists were welcomed by Mr. Alick Dick, managing director of the company, who gave them an opportunity of inspecting a Triumph TR3 fitted with a gran turismo body designed by the Italian stylist, Giovanni Michelotti, and constructed by Vignale of Turin. This car was exhibited at the Geneva Show.

Airborne Caravan

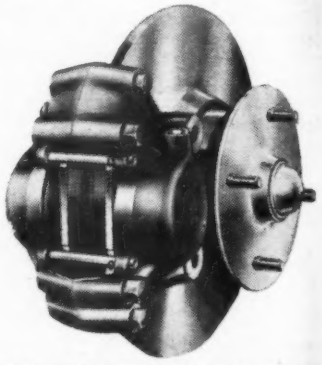
BASED on the Thames 10, 12 and 15 cwt vans, a new motorized caravan—the Airborne—has been introduced by Airborne Service Equipment, Ltd., Arterial Road, Leigh-on-Sea, Essex. Features of the interior layout include a settee, a double bed which pulls out from one wall, and a sink unit and hot-plate. Adjacent to the door, which is at the rear, are a wardrobe, writing desk and toilet compartment. A water tank is fitted.

To provide increased headroom there is a resin-bonded glass-fibre elevating roof, 7ft 4in by 3ft 2in, which raises the roof height to 6ft. It is lifted by an interior winding gear, and the side walls have plastic windows and ventilators.

Total cost is £875 for the 15 cwt or £865 for the 10 or 12 cwt vehicles.

Renault Dauphine Cheaper

A REDUCTION of £37 10s has been made in the British price of the Renault Dauphine. The new prices, with old ones in brackets, are: basic £505 (£530); total including purchase tax, £758 17s (£796 7s). The prices of extras, such as the Ferlec clutch, are unchanged. M. Claude Haardt, general manager of Renault (England), Ltd., said modification and mechanization of the production lines had made the reduction possible.



On the latest Girling type 16 production disc brake the caliper is made in two parts and bolted together. There is the usual provision for quick replacement of the segmental pads

Treble Road Expenditure Call

SPEAKING at the annual general meeting of the British Road Federation recently Lord Derwent, chairman, said: "If Britain is to have a road system capable of carrying the traffic of ten years hence, Government expenditure on new roads will have to be three times the peak of the present road programme." He added that once the motorway between London and Birmingham was opened, public demand for the rest of the network would be tremendous; he went on to criticize the Government's £1,500,000 reduction in expenditure on maintenance of existing roads during the present year.

Industry Display in Rome

MANY leading personalities in the Vatican City of Rome, and heads of religious institutions, were invited to a special reception at the Via della Camilluccia, last Tuesday, to inspect a representative cross-section of British cars. The meeting was planned by the various distributors in Rome, and personal demonstrations were arranged.

I.A.M. Tests Up Again

TOWARDS the end of May the Institute of Advanced Motorists carried out its 10,000th driving test. The total of candidates who took the test during the month was 505, an increase over the previous month for the third time in succession. Membership of the I.A.M. at the end of the month reached a total of 6,893.

Photographers' Maps

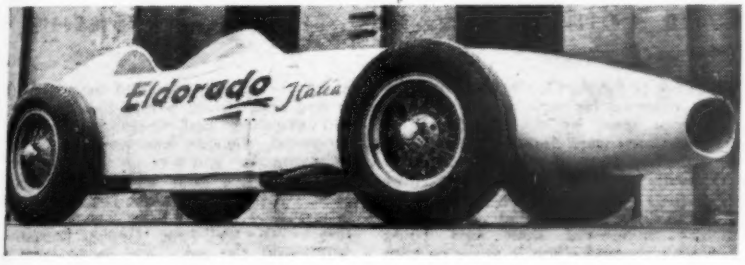
THE amateur photographer-motorist will be interested in a new series of road maps which are produced by Geographia, Ltd., for Kodak, Ltd., Kingsway, London, W.C.2. Each map, which is on a scale of six miles to an inch, is clearly marked with red symbols to indicate villages, monuments, castles, churches, views and other places of special interest to the photographer. There is also much useful information in tabular form on film speeds, exposures, colour and flash photography, and a gazetteer. The first of them to be issued—south-east England—has also an enlarged map of Central London. The maps cost 3s 9d each.

BODIES IN polyester-glass for the new 2-litre Peerless G.T. are now in production at James Whitson and Co., Ltd., West Drayton, Middlesex

Dockland Road Urged

AT the request of the London County Council the British Road Federation has prepared a memorandum proposing major highway projects for inclusion in the County of London Development Plan (1961). It stresses the need to construct limited access highways to carry long-distance traffic clear of local traffic, and calls for an extension of the London-Birmingham motorway to carry transport direct from the Midlands to London's dockland. Also given as a first priority is a motorway encircling Central London, from which radial motorways could then be built to link with existing trunk routes to the rest of the country. This is, of course, the basic theme of the successful recently completed Brussels road construction programme.

"Whatever the cost," says the memorandum, "such road modernization would have a higher economic return than any other development in the overall plan."



READY FOR MONZA: Stirling Moss' Eldorado-Maserati, which he will drive in the 500-mile race on 29 June. The car is powered by a 4.2-litre version of the 4½-litre sports car unit, and has two-speed transmission, as fitted to the American Indianapolis cars

REGULAR USERS of the A5 road from London to the Midlands are familiar with the rapid progress being made on the line of the Birmingham motorway. Here the preliminary earthworks show like an aircraft runway across the countryside; in the foreground are preparations for a fly-over crossing about five miles south-west of Northampton

Air Power and the T.T.

A COMPREHENSIVE review of all fighting aircraft of every nation will be contained in a special issue of our associated journal *Flight*. Price 1s 6d as usual, this special **Military Aircraft of the World** number will contain a large number of photographs and drawings which are released for the first time. It will be on sale from all newsagents next Friday, 20 June.

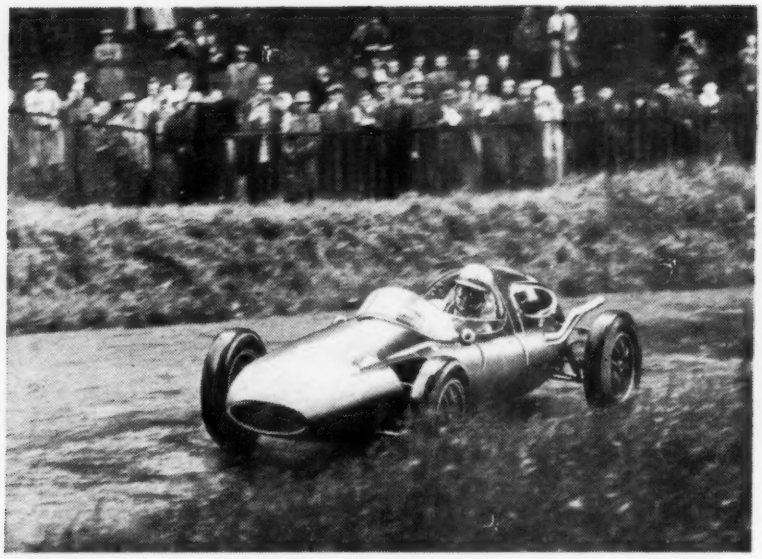
Also on sale next week will be the **Tourist Trophy Review** number of *The Motor Cycle* (on sale on Thursday, 19 June)—the last of three enlarged issues covering this year's motor cycle racing in the Isle of Man.

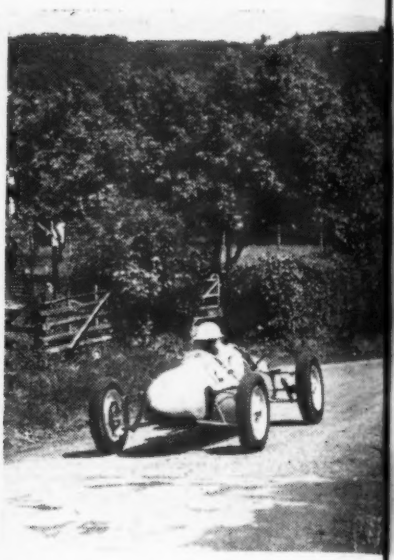
Abbey Celebration

STONELEIGH ABBEY, 2½ miles from Kenilworth, Warwickshire, recently celebrated the centenary of a visit by H.M. Queen Victoria and H.R.H. the Prince Consort in June 1858. The Abbey is open from Good Friday to mid October daily from 2.30 to 5.30 p.m. (including Sundays and Bank Holidays); admission is 2s 6d for adults and 1s 3d for children. The Abbey was founded in 1154 and parts of the original buildings are incorporated in the Elizabethan wing.

Metal Spraying Conference

AN international conference on metal spraying is to be held from 29 September to 3 October, at the new College of Technology, Gosta Green, Birmingham. Papers on many aspects of metal spraying have been submitted by experts from all over the world, and the programme for the Conference will include practical demonstrations and works visits. A similar conference was held in 1956 in Eastern Germany.





Fastest time of the day—and 10 points towards the R.A.C. Hill-climb Championship: Tony Marsh's Cooper-J.A.P. which, during practice, unofficially broke the Shelsley record. Right: David Boshier-Jones (Cooper-J.A.P.), whose time of 38.55sec put him next to Marsh in the Championship climbs

Sun and Rain at Shelsley Walsh

TONY MARSH COLLECTS 10 POINTS TOWARDS THE CHAMPIONSHIP

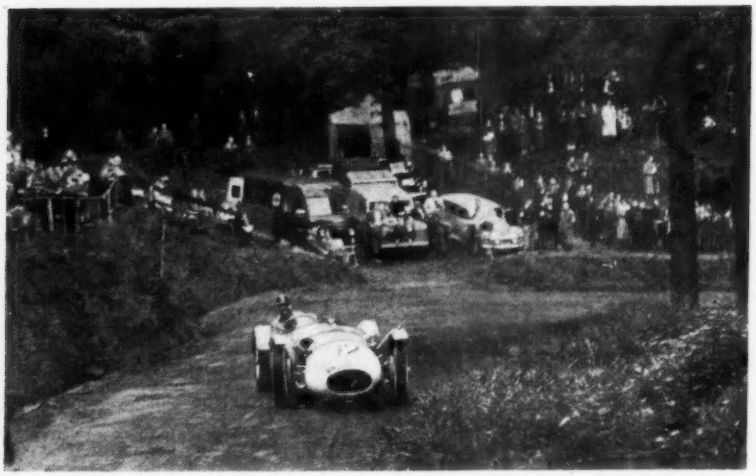
FOR over 50 years, interrupted now and again by wars and petrol shortage, the Midland Automobile Club has organized hill climbs at Shelsley Walsh. In this period the time taken to climb the 1,000-yard stretch of narrow, bumpy tarmac has fallen from 77.60sec by E. M. C. Instone with a Daimler in 1905, to the present record achieved by the late Ken Wharton, who took his famous black E.R.A. to the top in 35.80sec at the August meeting four years ago.

Last year Dick Henderson driving his blown Cooper-J.A.P. got very close with 35.84sec, and while practising for the meeting last Saturday, Tony Marsh, who eventually got f.t.d., broke the record unofficially by recording 35.51sec in his 1,100 Cooper-J.A.P. On the day, unfortunately, it rained for most of the meeting, and times went by the board. Start line conditions were dreadful, because of the appalling state of the paddock; it is difficult to understand why, after these many years, the M.A.C. has been unable to provide competitors with facilities to prevent them and their cars being covered with mud when it rains, or with dust on the infrequent sunny occasions.

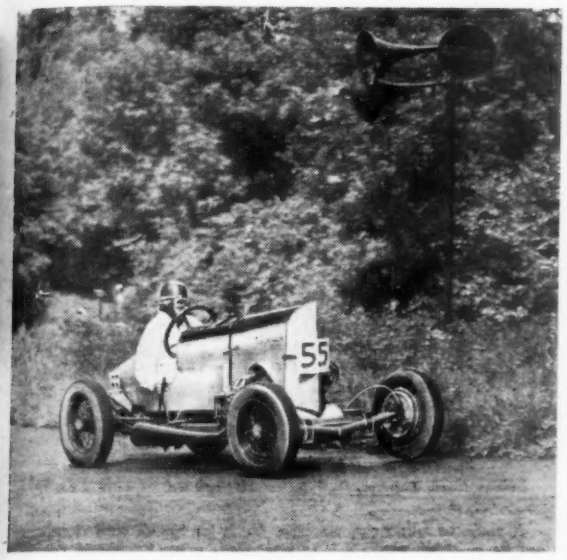
No. 1, a 500 c.c. Cooper-J.A.P. driven by B. Eccles, was first up, to record 48.95sec on the wet surface, followed by Don Parker, Cooper-Norton, who in spite of missing a gear was 1.43sec faster. T. M. Norton, J.L.R. Special, stalled his engine, and then R. F. E. Catherwood hit the bank on the left-hand bend at the Esses; the engine appeared to stop for a second and, almost before the spectators and marshals had realized what had happened, the car was pointing in the right direction and shot up the hill out of sight; 50.84sec after all this was quite good. It was left to Dick James to make fastest time in this class for formula 3 cars. His well-kept Cooper-Norton—apparently the only car fitted with a safety hoop behind the cockpit—made a good climb without any fireworks.

Interest among the smattering of spectators—thinned by the weather, rival meetings at Silverstone and Oulton Park and a cricket match near Birmingham—heightened as the up-to-1½-litre racing cars came to the line. This class included such experts as Marsh, Christie and Boshier-Jones, and some of the cars were intriguing. There was Reg Phillips' Fairley Special with a supercharged, transverse-mounted Climax engine, Bill Moss' E.R.A. Remus, and Chris Summers' volcanic Farley Special.

Having its first airing for nearly 18 months was Djinn, Rupert Instone's special. This has single wishbone and low transverse leaf spring front suspension, and at the rear a rectangular de Dion tube connects the hubs, which are located also by trailing arms. The transverse leaf spring is on top of the assembly in Cooper fashion. A Shorrock blower provides boost for the 1,096 c.c. twin J.A.P., and the drive goes through a motor cycle gear box via a countershaft to a centre drive sprocket mounted between the brake drums. There was also Alan Southon's 1,261 c.c. supercharged Becke Powerplus, which is an equally interesting car, built specially for hill climbs many years ago.



E. P. Scragg's immaculate H.W.M.-Jaguar needs a little opposite lock as it slides out of the left-hander at the start of the Esses



Still at it: Basil Davenport's venerable Shelsley special, the G.N. "Spider," is one of the few remaining links with Shelsley meetings of bygone years

Reg Phillips' Fairley Special, with 1,490 c.c. Climax engine mounted athwart the frame behind the driver, swings through the Esses to record 40.85sec—second fastest in its class

Shelsley Walsh . . .

The first few drivers up gave object lessons in handling these very high power-weight ratio cars on such a tricky course—Marsh, David Good, Christie, Phillips and Boshier-Jones are masters at the game. Weather conditions had eased, and odd patches of sunlight filtered through the trees. It was trickiest at the Esses, as M. Hatton found when his 1,100 Cooper-J.A.P. spun broadside with the front wheels up the bank. Up to now times had been in the low forties, and 39.73sec by David Boshier-Jones. Then Christie and Marsh brought out their J.A.P.-engined Coopers, and the latter got down to 38.74 sec. Michael Christie made a faultless climb, but could not better 40.20sec.

The sports cars were heralded by two spotless Lotus-Climaxes in the hands of J. J. Richards and E. Lewis. R. E. Wright, with the only chain-gang Frazer-Nash, seemed to be in the wrong gear for the 1 in 6.8 gradient between the Esses, and this was confirmed when a marshal picked up a chain after the Nash had gone slowly up the finishing straight. Then over the loudspeakers came a sound as of a hive of bees that had been disturbed as P. Coleby's Goggomobil made a valiant attempt. A change-down in the middle of the bends brought up the revs even more, but it seemed quite a while before the plucky little car reached the finishing paddock.

More rain fell on the luckless drivers of the larger racing cars. Paul Emery had hard work keeping the Emeryson Jaguar on a straight path, clouds of spray were thrown up, and generally life at that moment was not particularly pleasant. G. H. Keylock's Cooper-Bristol came to a slow halt by the first corner in a cloud of steam, and then Jim Berry, with the red E.R.A. Special, shot up through the trees, the blower shrieking defiance to the weather, the driver gritting his teeth and really giving the spectators something to talk about. The Emeryson appeared again, driven this time by Miss Roberta Cowell, who controlled the car well to clock 48.91sec.

Old stagers' memories were jolted by Basil Davenport's G.N. Spider. The high vee-shaped cowling cleaved the way for the big cylinders of the air-cooled engine as the wonderful old car thundered its way up the hill (just to refresh those memories, B. H. Davenport held the record for three years in succession with a Frazer-Nash—in 1926, '27 and '28 his times were 48.8, 47.8 and 46.2sec respectively).

The sports car classes up to 2½ and over 2½ litres provided, first, a batch of cars powered by Bristol engines, the exhausts of which were overwhelmed by the fascinating scream of the Bugattis driven by F. E. Wall and Jim Berry. Miss R. Massey had to have her XK150 Jaguar pushed off the bank after it had spun, but Sir Clive Edwards made a good recovery when his Cooper-Bristol slid at the left-hand bend. There was a short interval before the climbs were repeated, and the opportunity was taken for Mr. E. M. Clayson, chairman and joint managing director of *The Birmingham Post and Mail*, to present D. Holland and D. Phillips with a cup and cheque for winning the recent *Birmingham Post* rally.

Unfortunately the sun lost its battle and the course was very wet when the repeat climbs were made. Nearly everyone took seconds longer to get up the hill except a select few, amongst which was Coleby's Goggomobil, which had a more suitable gear engaged and fairly romped through the Esses. The entrants for the R.A.C. Championship had been kept until the end; by the time they were ready, the rain had ceased and there were signs of patches of dry road and a promise of some good times.

Tony Marsh was first away with 39.54sec, to be followed by Boshier-Jones who gained a bit between the corners and took 0.76sec less. Summers, with the Farley Special, was terrific, the front wheels straining at fantastic angles as they sought to keep contact with the ground. David Good missed a gear on the way up the finish straight, and then last of all, Christie pulled the best time so far out of the bag, 38.73sec. This set the target for the second runs, and Marsh had something to aim at—he collected f.t.d. and 10 points towards the Championship with 37.97sec.

Dick James with the only five-hundred-engined car, clocked a very creditable 41.47sec and Berry, after stalling the E.R.A. Special on the line, came up noisily in a cloud of blue smoke, foot hard down. P. Gaskell left part of his Cooper's cowling behind, and then this rather damp Shelsley was over.

PROVISIONAL RESULTS

Racing Cars: up to 500 c.c.: 1, Cooper Norton 499 (R. B. James), 46.46 sec; 2, Cooper Norton 500 (D. Parker), 47.52sec; 3, Cooper J.A.P. 497 (B. Eccles), 48.85sec. **501 to 1,500 c.c.:** 1, Cooper J.A.P. 1,098 (M. A. H. Christie), 40.20sec; 2, Fairley Special 1,490 (R. W. Phillips), 40.85sec; 3, Cooper Climax 1,475 (A. E. Marsh), 41.20sec. **1,501 to 2,500 c.c.:** 1, Emeryson Jaguar 2,488 (P. Emery), 45.97sec; 2, E.R.A. Special 1,960 (J. Berry), 46.02sec; 3, E.R.A. 1,966 (D. M. C. Hull), 46.46sec. **Sports Cars: up to 1,500 c.c.:** 1, Lotus Climax 1,500 (E. Lewis) 43.78sec; 2, Lotus Climax 1,098 (J. J. Richards), 44.76sec; 3, Lotus Climax 1,098 (J. G. Tallis), 47.06sec. **1,501 to 2,500 c.c.:** 1, A.C. Bristol 1,971 (W. C. Wilson), 44.05sec; 2, Frazer-Nash 1,971 (J. R. Rudd), 44.86sec; 3, Lotus Bristol 1,971 (P. H. G. Cottrell), 44.98sec. **Over 2,500 c.c.:** 1, H.W.M. Jaguar 3,442 (E. P. Scragg), 43.09sec; 2, Jaguar C type 3,442 (A. C. Barrett-Green), 44.00sec; 3, Jaguar C type 3,442 (P. M. Salmon), 44.56sec.

R.A.C. British Hill Climbing Championship: 1, Cooper J.A.P. 1,100 (A. E. Marsh), 37.97sec; 2, Cooper J.A.P. 1,100 (D. Boshier-Jones), 38.55sec; 3, Farley Special 1,098 (C. G. Summers), 38.60sec.

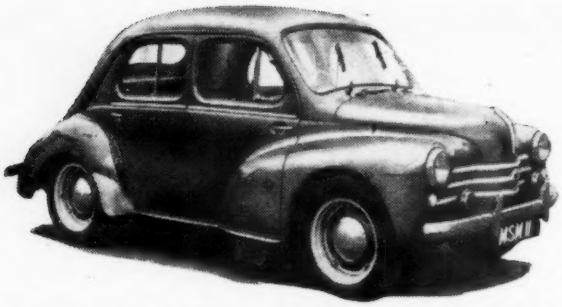
Premier Awards Trophy: 1, Cooper J.A.P. 1,100 (A. E. Marsh), 37.97sec; 2, Cooper J.A.P. 1,100 (D. Boshier-Jones), 38.55sec; 3, Farley Special 1,098 (C. G. Summers), 38.60sec.

Fastest Sports Car: H.W.M. Jaguar 3,442 (E. P. Scragg), 43.09sec.

Fastest Shelsley Special: Farley Special 1,098 (C. G. Summers), 40.38sec.

Fastest Lady Driver: Aston Martin DB3S 2,922 (Mrs. J. Bloxam), 45.65sec.

Fastest Time of Day: Cooper J.A.P. 1,100 (A. E. Marsh), 37.97sec.



One of the head lamp reflectors has tarnished, and needs to be cleaned or resilvered, and both head lamps are out of adjustment. The wipers clear very small areas on the windscreen

IT is appropriate and logical that the Renault 750—first small car to be offered with automatic clutch control—should be the first two-pedal car to be tested in this series, and the effects of two years' use on the Ferlec system fitted to this car were studied with interest. In fact, it showed little sign of deterioration; but an indirect effect was that the lengthy throttle cable was in need of lubrication, and precise control of the throttle opening was difficult. The take-up was smooth and the clutch response to movements of the gear lever was instantaneous, but the impression that the clutch was not disengaging correctly was given by the fact that the car would creep at traffic halts unless held by quite firm pressure on the brake pedal, and that there was a noticeable jolt when bottom gear was engaged at a standstill. Adjustment may rectify this.

The car itself was considered to be fairly typical of the average standards expected after this age and mileage. It is finished in pale metallescent blue, which is mainly sound apart from one or two tiny dents and scratches, and a few unobtrusive signs of early rusting at wing edges and joints. The chromium has lasted quite well, but it is an interesting point that its appearance is now inferior to that of the other parts of the car on which stainless steel has been used, and which are still pretty well as new.

Inside, the rear compartment shows remarkably little sign of use; wear is more noticeable in the front, but the condition there is nevertheless good, and minor marks and creases on the p.v.c. upholstery are the chief tell-tale indications of the car's life. Added to these are the familiar drab appearance of the roof lining which is so common with fluffy cloth; and looseness of the solitary sun vizor.

Mechanically, the worst feature of the Renault is its handbrake. Even on a gradual slope it will not hold the car, and as the Renault cannot conveniently be left in gear, this fault is one that should be rectified at once. The footbrake was extremely efficient, so that possibly no more than simple adjustment is necessary to make the handbrake effective.

Directional stability has never been one of the good features of the model, but although no modifications to the suspension were detected, this example held a straight course with less than the usual effort on the part of the driver.

Steering was light and virtually free from lost movement, but an even better feature of the Renault was its cornering ability. Sharp, even right-angle corners could be taken quickly without special skill, and with complete confidence in the car's ability to follow the chosen line. Quiet over all surfaces, the suspension is extremely good, and gives a commendably comfortable ride; the dampers are still thoroughly effective.

On hurried changes the synchromesh (on the two upper ratios of the three-speed gear box) can be beaten, but in normal use the gears engage smartly, and the central lever is pleasant to use. There is little gear whine, but in any case noise from this source is drowned by transmission and engine noises. About 45-50 m.p.h. is a happy optimum cruising speed, but there is a good deal of buzzing as a reminder that the engine is then turning at nearly 4,000 r.p.m. Engine fumes could be smelt inside the car whenever the engine was made to work hard for long periods.

Starting was poor throughout the test whether hot or cold, and the engine was so slow in firing from cold that the automatic choke must be not working or out of adjustment.

X-HAND MARKET GUIDE

Used Cars on the Road—126

1956 RENAULT 750 (Ferlec)

Basic price new	£442 0 0
Total price new	£664 7 0
Price secondhand	£525 0 0
Acceleration from rest through gears:	
to 30 m.p.h.	9.8 *sec.*
to 50 m.p.h.	31.9 *sec.*
20 to 40 m.p.h. (top gear)	19.6 *sec.*
30 to 50 m.p.h. (top gear)	24.8 *sec.*
Petrol consumption	47-51 *m.p.g.*
Oil consumption	2,500 *m.p.g.*
Mileometer reading	28,392
Date first registered	*April* 1956

Provided for test by Auto Sales (London), Ltd., 59-65, Belsize Road, London, N.W.6. Telephone: MAIda Vale 5555.

A radiator blind, an effective fresh-air heater and demister, a scuttle vent for cool air, and numerous other minor details mark this car as the de luxe model of the 750. Among other features of the de luxe version are twin horns, operable either together or one alone according to pressure on the switch. Only one of these horns was working, however, and another electrical fault on the car was that the individual parking lamps, which can be switched on either side at a time, were out of action.

All the tyres are Michelins—probably the original set. Three of them are well worn, but about half the tread remains on the other two. The spare wheel was flat when the car was received for test. There are a few hand tools and a jack in the toolkit.

One of the most impressive features of the Renault is that the car feels very sturdy and well-built, and it is free from rattles. Performance is not impressive, as the figures above indicate, but set against this is the fact that even a combination of city traffic conditions—in which the car excels—and hard driving fails to bring the petrol consumption much below 50 m.p.g.

Oil consumption is not high, and the occasional whiff of fumes already mentioned is the only indication of wear in the engine; the power unit should serve for many further miles without overhaul. In other respects the good general bodily and mechanical condition of the Renault is marred only by a number of detail faults, which in any case should be rectified before sale.

The Renault's simple seats have not sagged at all, and are unexpectedly comfortable although the front passenger seat is insecure. The car's handbook is in the facia locker

Handa Overdrive SIMPLE AND EASILY INSTALLED UNIT FOR POPULAR CARS

FOR a number of years the overdrive unit manufactured by Handa Engineering (London), Ltd., has been available for a variety of models, including the Austin A.50, M.G. Magnette, Morris Oxford and the entire Ford range. It can also be fitted to Vauxhalls, including the latest Velox and Cresta. The sole concessionaires are Vehicle Developments, Ltd., 60, Balcombe Street, London, W.1.

In the design of the Handa, the aim has been to achieve simplicity and ease of installation in order to keep costs to a minimum. Production is not on a sufficiently large scale to ensure a very low price but, nevertheless, it is the least expensive of proprietary overdrives, ranging from £42 10s to £62, excluding fitting. The charge for fitting in London for the Vauxhall Velox or Cresta unit costing £58 is £7 10s. It is relatively simple for a competent mechanic.

The overdrive unit, which is mounted on the rear of the gear box and therefore operates in all gears (including reverse), has a single planetary gear which is brought into or out of action by a dog clutch operated by engine vacuum. It is selected by a small push-pull control, usually fitted on the facia.

The overdrive gear has a ratio of 0.743 to 1, which means that engine speed in relation to propeller shaft speed is reduced in this proportion, thus raising the comfortable cruising speed in top gear and providing an alternative higher set of intermediate ratios.

A 1958 Vauxhall Cresta fitted with Handa overdrive was made available for a brief test by the Vauxhall distributors, H. Pope and Sons, Ltd., 45, Ballards Lane, Finchley. When this model was road-tested recently by *The Autocar*, it was found to be a top-gear car because of the extreme flexibility of its six-cylinder engine. Normal top-gear ratio is 4.125 to 1, and with overdrive engaged this becomes 3.1 to 1. Corresponding speeds per thousand r.p.m. are 16 and 21.2 m.p.h.

Although overdrive top is rather high, it was found possible under most conditions to drive on this ratio above 20 m.p.h. without changing down, although acceleration naturally suffers, particularly below 30 m.p.h. Cruising speed is a comfortable and effortless 75 m.p.h., at which the engine revolutions are 3,500 r.p.m. A speed of 85 m.p.h. (4,000 r.p.m.) was readily obtained in this ratio, slightly downhill, without having much space in which to work it up.

The natural method of using overdrive on the Cresta is to engage it outside towns and leave it in this position for all driving, including getting away from rest. Maximum speeds in first and second, limited by valve bounce, are 42 m.p.h. and 75 m.p.h. compared with 32 and 56 m.p.h. for direct drive.

On an uphill gradient, starting in the overdrive first is not so satisfactory, as clutch judder and engine faltering are more easily produced. Overdrive second is particularly convenient for overtaking.

The procedure when engaging overdrive without using the clutch is to pull out the control and immediately to close the throttle, when a whirring sound can be heard. After pausing for a second or two, the throttle is opened again, and the dog clutch engages. The whirring noise, disturbing at first acquaintance, is caused by the teeth riding over each other before engagement, but it will not lead to damage or rapid wear.

To engage direct drive, the control switch is pushed in and simultaneously the throttle closed, followed by immediate reopening of the throttle. As the engine speeds up, the clutch engages. This requires more judgment than engaging overdrive, and it is not advisable to do it under 20 m.p.h. The knack is soon learnt, and although not a perfectly straightforward operation, the engagement of the dog clutch is smooth.

When fitted to a car like the Vauxhall Cresta, the Handa is treated more as an alternative axle ratio, which is brought into use to suit particular road conditions, and is left in either one or the other position for long periods. Greater fuel economy can be expected if overdrive is used frequently.

SERVICE TESTS ON OIL ADDITIVES

A BEWILDERING choice of oils is available for the motorist to select from those recommended by the manufacturer of his particular car. Should he use a "straight" mineral oil, an "additive" oil, or a multi-grade? These are the questions he often tries to answer.

Since 1955, a 25,000-mile service test has been carried out on each of 13 different cars by Lubrizol International Laboratories, the research branch of an organization which supplies chemical additives to the oil industry.

The objects of the tests were to compare wear and cleanliness of identical engines operating under similar conditions. The engines of 12 new 1955 models, consisting of four Hillman Minx Mk. 8 saloons, four Morris Minor Series II saloons, and two each of Vauxhall Velox and Triumph TR2, were stripped.

All components which were likely to show any wear were measured—this amounted to about 1,000 measurements for a four-cylinder engine. Any parts which were already outside the manufacturer's tolerances were replaced, and selective assembly ensured that clearances were identical on engines of the same type.

All then completed 25,000 miles under controlled conditions. Six of the engines were lubricated by "straight" mineral oils of either SAE 20 or SAE 10W/30 viscosity, and the remainder used the same oils treated with a combined detergent and anti-oxidant additive. The base oil was a solvent refined Venezuelan stock and, therefore, of high quality.

Test conditions were chosen which are known to encourage low engine temperature corrosion and sludging. For the whole of the 25,000 miles the following rules were adhered to:

1. Maximum speed restricted to 40 m.p.h.
2. Maximum distance of 100 miles per day.
3. Cars parked out of doors.

To avoid the effects of different driving techniques, the drivers changed cars every fortnight. Cars were serviced at 1,250-mile intervals, the engine oil was changed every 2,500 miles, and the oil filters at 5,000 miles.

Oil consumption remained consistent up to approximately 20,000 miles, when the smaller engines showed an increased consumption rate, those running on "straight" oils developing some piston slap.

After each car had covered 25,000 miles, each engine was stripped, the same dimensions were measured, and the parts laid out for examination. From the appearance of these parts it was clear that those engines which had used additive oils had much greater freedom from sludge, lacquer on piston skirts, deposits on main and big-end bearings and internal parts.

All dimensions in units of 0.001in	Straight SAE 20	Additive SAE 20	Straight SAE 10W/30	Additive SAE 10W/30
Increase in dia., top of cylinder bore	6.5	2.8	8.4	3.1
Increase of top ring butt gap	42.0	30.0	16.5	18.0
Increase of top ring side clearance	10.7	5.2	3.1	7.8
Decrease in crank pin diameter	0.9	Nil	0.8	Nil

All makes of engines showed less general wear when additive oils were used. This, together with the detergent effect, was most pronounced in the smallest engine of the group, the Morris Minor, and could be accounted for by the fact that it operated at a higher percentage of its maximum output than the larger engines. Examples of wear on Morris Minor engines are given in centre column.

Included in the tests was a Series II Morris Minor Traveller which also completed 25,000 miles, but was not restricted in any way, running a high proportion of the mileage on long journeys at high average speeds, using an additive SAE 20 oil. Engine wear was similar to that of the counterpart fleet test Minor, but with additional wear, mainly confined to the valve gear. Also this was the only engine using an additive oil to show any wear at crankshaft journals—average 0.0001in.

For the type of driving which these tests included—relatively short journeys such as a motorist would make travelling between home and place of work—the following can be concluded. Oils treated with additives definitely give improved engine cleanliness and reduced wear. The use of additives with multi-grade oils is even more important than with single-grade oils. There was no discernible difference in fuel consumption or ease of cold starting between identical engines using SAE 20 or SAE 10W/30 grade oils. Neither additive treatment nor the grade of oil used had any effect on the condition of the valves or valve seats, or on the build-up of carbon in the combustion chambers.

The car referred to in the letter below headed "African Gazelle", seen at a point overlooking the Indian Ocean known as the Wilderness

Correspondence

Foreign Touring

No Carnet for Italy. The letter (6 June) from the Public Relations Officers of the two leading motoring organizations cannot be left unanswered, as it implies that a carnet is required for touring in Italy. For a single entry into Italy a triptyque is all that is required; this can be obtained in a matter of minutes at any of the Italian frontier posts as one enters, costing 500 lira (under 6s), and is conveniently obtained at the same time as the tourist petrol coupons. The same applies to Portugal.

Although in previous years I have obtained a carnet (which was then necessary) through one of the organizations, this year I completed a three-week tour abroad in France, Italy and Switzerland without difficulty and armed only with passports, the car registration book, my British driving licence (which was never asked for) and the usual green insurance card required by the Swiss, and obtainable free of charge from one's insurance company. Apart from the cost of the triptyque at the Italian frontier, mentioned above, and 3d for the British Customs declaration form 29c, there were no customs due or any other charges either at Lydd airport or at any of the frontiers abroad. French tourist petrol coupons were obtained from a travel agent in this country for sterling, but could equally well have been obtained on entry into France.

We entered Italy twice during the tour but the second visit only necessitated obtaining a duplicate triptyque.

Whitford Bridge, Worcestershire. A. H. DUNCAN.

[A triptyque is also accepted in Spain.—ED.]

Drums or Discs?

"Almost Incredibly Good" Brakes. In the Technical Editor's highly interesting article "Personal Assessment" (16 May), there is special reference to the braking system on the Rolls-Royce Silver Cloud, observing that "if sufficient money is spent on a drum and shoe braking system, it can be made almost incredibly good." This statement is supported by the reports on the Alfa Romeo Giulietta, the brake drums for which are made by Girlings to "a special specification", the general behaviour of these brakes being considered, if anything, superior to that of another car fitted with disc brakes on the front wheels. Should manufacturers pay more attention to the design of brake drums—or cast them aside and go in for discs on a vast scale?

Bromley, Kent. LESLIE R. LEADER.

African Gazelle

"Performed Admirably" on 1,730-Mile Trip. In early February, and with barely 1,600 miles to the credit of my Singer Gazelle, I was compelled to make a 1,730-mile trip from Cape Town to Johannesburg via the Eastern and Transkei Territories. In extreme midsummer heat (95 deg plus in the shade) and on all types of South African roads, I regarded this rushed journey as a fair test of performance of my new o.h.c., 1½-litre acquisition, which at all times performed admirably.

Admittedly about two-thirds of the journey was on tarmac over our modern national highways, but several hundred miles were on either extremely potholed and stony Transkei roads, or severely corrugated and dusty loose gravel roads through the Eastern districts (Karroo), where even heavy American cars with their soft suspensions appear to vibrate into fragments at speeds below 40 m.p.h.

Driving was almost constantly brisk, but irrespective of surface or speed, road adhesion, steering and general handling qualities served to instil immediate and ample confidence in the driver. Suspension "hitting through" did occur, but infrequently, on badly potholed roads. I am assured by the agents that this would be avoided if demand was constant and warranted heavy duty shock dampers. Wherever road surface permitted, one found 75 m.p.h. (O/D top) a very satisfying cruising speed. However, not infrequently does one detect the needle encroaching on the 90 mark without protest from beneath the bonnet. What a

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Opinions expressed on these pages are those of our correspondents, with which The Autocar does not necessarily agree. Letters intended for publication should be addressed to the Editor, The Autocar, Dorset House, Stamford Street, London, S.E.1.

Correspondence

comforting thought that at 80 m.p.h. one's engine is only doing 3,910 r.p.m. I found O/D third a most convenient gear for mild to moderate climbs without sharp corners.

With one passenger for the first 500 miles, and 344 lb of luggage for the whole journey overall, premium grade petrol consumption (carefully calculated) was 31.6 m.p.g. I feel confident that with "loosening-up" this figure in time will rise to 34-35 m.p.g. Oil consumption was a quarter-pint per 1,000 miles, and the water temperature never exceeded 75 deg in spite of intense heat for most of the time.

I heartily agree with correspondents in your columns that the degree of flexibility of the Singer o.h.c. power unit cannot be fully appreciated without Laycock-de Normanville or an equally appropriate overdrive mechanism.

Johannesburg, South Africa. P. W. MICHAU.

Greasy Windscreens

Paint Brush Cleaner the Answer. Silicone smear can be removed quickly and easily from windscreens, screen wiper blades and the like with Polyclens paint-brush cleaner. I have applied it to the glass neat, rubbed down to the "smeary" stage with soft paper tissue and then cleaned the screen in the normal way with a wet plastic sponge. The new (3,000 miles ago) laminated screen of my Rover 90 became badly affected by silicone polish carried back from the bonnet top at high speed in rain. I was contemplating a lot of hard work when I was told about Polyclens at a garage where I was buying new wiper blades to replace the contaminated (14-day-old) ones. I have cleaned those contaminated blades also in the same way and it appears to have done the trick.

London, E.C.3. D. T. HARRISON-SLEEP.

Time for Lights

Reminder from a Road Hog. By most standards I am probably one of the worst types of driver, because I like to travel somewhat faster than the 35-40 m.p.h. amble on A class roads. However, in the interests of safety (and to help other roads hogs like myself) why do we have to wait for "official" lighting up time, irrespective of the conditions prevailing, before vehicle lights are switched on?

Belper, Derbyshire. R. G. ELLIS.

Vehicle Tests

Anomaly Illustrated. I have read your leading article of 23 May, on compulsory vehicle testing and head lamp dazzle, with considerable interest. So far as I can discover, however, by perusal of the Construction and Use Regulations, there is no obligation to have "head lamps" in the accepted sense of the word.

All that the owner of the old car need do is to see that none of his lamps is fitted with a bulb of more than 7 watts' power when the car is submitted for test; that will be sufficient to eliminate the dazzle test entirely. Having obtained his certificate, the owner can then fit bulbs of any power he likes. He will be quite within the law in doing this, for the test certificate can relate only to the car in the condition in which it was at the actual moment of test. What modifications are made afterwards will not affect the validity of the certificate.

Once issued, the certificate will have no bearing on the subsequent serviceability of the car. It will act only as a permit to acquire the next excise licence when due, and it is an interesting thought that as much as 11 months or more might elapse between the two dates. Anything might happen to the car in the meantime. Obviously further comment, your own included, must await the regulations which will follow the White Paper. In those there might be some rectification of these and other anomalies.

G. E. THOMAS,
London, S.E.1. Editor, *Motor Trader.*

Super Snipe

Request for Economy Tips. Has any Humber Super Snipe (Mark III) owner successfully found a way of increasing the mileage per gallon either by fittings or modifications to the (Stromberg) carburettor? I should be very obliged to anyone who could give me the benefit of his experience.

Newcastle-on-Tyne. D. LUNTLEY.

[Letters will be forwarded.—ED.]

Ils Ne Passeront Pas

Ye motorists who throng the Kentish highways,
Preserve a sense of judgment sane and shrewd;
Though Sevenoaks and Malling
Have their traffic-jams appalling,
They pale beside the bottle-neck at Strood!

As with empty tanks you're crawling home from Margate,
Let your courage to its sticking-place be screwed;
Just remember, when you're filling 'em
At Faversham or Gillingham,
There lies ahead the bottle-neck at Strood.

Perchance you're knocking back a pint at Maidstone,
Or at Wrotham toying with a spot of food,
And Khrushchev drops an "atom"
On Rochester and Chatham
Which fails to shift the bottle-neck at Strood.

No war or plague or famine lasts for ever,
Yet here's a forecast crisp if somewhat crude:
All your egg-heads, *all* your sages
May strive for countless ages,
But there'll *always* be a bottle-neck at Strood.

London, W.C.2. J. E. L. SKELTON.

Up in the Morning

Benefits of an Early Start. I would like to extol some of the advantages of early morning car travel as experienced by my family and myself on a journey from Newcastle-upon-Tyne to London and back over Whit weekend. We set off at 2.10 a.m. and arrived at Welwyn Garden City at 8.50 a.m. in three driving stretches, with a 15-minute coffee halt at the end of the first two hours, and a 45-minute halt for sandwich breakfast at the end of the second two hours. Total mileage, door to door, was 262, and average speed on running time 45.9 m.p.h. The return journey was similar at 45.2 m.p.h. The average speed for the middle two hours in each case was exactly the same—48.4 m.p.h., including deserted Doncaster.

Maximum speed was 65 m.p.h., but mostly never exceeded 60. I could no doubt have cruised at 80 on many of the deserted roads, and maybe saved less than half an hour on the journey, but preferred to control myself to an untiring speed. The rear footwells were levelled up so that the whole of the rear made a bed for the children.

Penalties of this method of travel are the actual getting up at 1 a.m. and some tiredness in the evening of the travelling day, but this is somewhat offset by going to bed at 8 p.m. the night before. The advantages as opposed to rail or day time travel are many—£8 saved on second-class rail fares, and mobility on arrival. You spend four nominal days away but also have four full days at the destination if you discount one tired evening. Transport drivers are good, as also are private car drivers on the road at that time—"Sunday tripper" types are non-existent. What a pleasure to cruise for mile after mile at 60 m.p.h.—in 520 miles there was so little traffic that only during the last half hour at each end of the journey was I ever baulked of passing at will.

The only driving follies were mine in that, as sunrise approached, I travelled on dipped lights and, from the previous hours' force of habit, I pressed the button to oncoming traffic, and, of course, put the lights full on!

There are car economies, too—almost constant engine speed, and thus the best petrol consumption I have ever had; little gear changing and no severe braking or acceleration.

The car, an A.90 Westminster, cruised at a happy 3,000 r.p.m., but several smaller ones—Morris 1000 and Anglia—cruised steadily past. In other words, any car will do, but can you get up at 1 a.m.? Coffee to the tune of the dawn chorus is alone worth it if you can.

Newcastle-upon-Tyne. H. H. PORRITT.

Touring Attachments

Critic of Car Manufacturers. I found it very easy to fit a Dixon-Bates towing bar for a caravan to my Austin Somerset car, but on my new Austin Cambridge the fitting of a Dixon-Bates or Witter towing bar is a major operation which calls for sawing pieces out of the lower back of the body shell. Is it not about time that a major firm like Austins recognized that caravans are ever-increasingly towed by their cars and, in conjunction with the two firms of tow bar specialists, designed a standard tow bar for fitting to their car, and had prefabricated louvres let into the body shell as standard to receive the fitting without the

Correspondence

need to hack-saw pieces of body away? The tow bar fittings should drop into place as easily as fitting a replacement rear bumper and arms, and I believe that Hillmans issue a standard tow bar and fitting ready for the job.

The towing of caravans is increasing rapidly, and last August, in Scotland, in a period of two hours, 60 towed vans passed us on their way home south, as we were on our way up. In the interests of the car and of safety of towing, the best possible and strongest connection of the tow-bar to the towing vehicle should be planned, and obviously the responsibility for this lies with the car manufacturer.

Blackpool, Lancashire. GEO. B. COOPER.

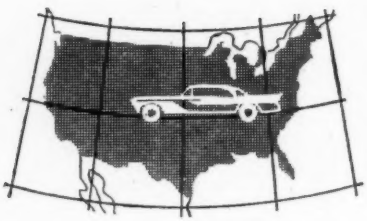
Oil Additives

Invisible Colloidal Suspension. We have to refer to the letter in your issue of 16 May from Mr. G. J. Vineall, Technical Director of Rocol, Ltd. Mr. Vineall states that "if the oil is clear and pale it does not contain this solid additive"—i.e., molybdenum disulphide.

If sufficient care is taken to eliminate the larger particles of molybdenum disulphide by elutriation or other means, a colloidal suspension can be made in which the molybdenum disulphide is not visible to the naked eye. It can be detected under a reasonably powerful microscope, however, and can be suspended in large enough quantities to provide the full efficiency of molybdenum disulphide lubrication. These facts can be demonstrated.

We would point out that the two main advantages of the very small particle size required to give an apparently clear oil are the facts that molybdenum disulphide does not settle and that there is no possibility of clogging of filters or oil ways.

London, S.W.1. R. N. GUNN (*Director*), Senol, Ltd.



Detroit notebook

SMALL CAR PROJECT; ALUMINIUM FOR ENGINES

Roger Huntington, A.S.A.E.

NEW developments in the small-car picture: It begins to look as if General Motors' most closely guarded secret of the last decade will turn out to be the worst-kept secret—rumours of their small-car project have been flying like mad over here for several weeks. Public interest, of course, has been much more intense than it has been on more normal developments—all of which only served to fan the rumours and lubricate the leaks. The most recent bombshell—and probably the straw that broke the camel's back—is the reported $8 million order for dies to produce a small "pancake"-type aluminium engine. This apparently forced some move by the G.M. brass; a few hours before this is written the corporation public relations men have released a statement admitting "development work" on a small passenger car with an air-cooled engine in the rear. Not much information . . . but enough to take the edge off the rumour mill for a while.

Actually, the whole deal is still very much "up in the air," and not at all definite. That reported $8 million is only a small part of the investment required to tool up for a new engine (the dies that were ordered are the part of the tooling that takes longest to develop); G.M. could write that off as development cost if they decided to back down at the last minute. Or it is possible that, if the market for a small Detroit car didn't seem to shape up over here, G.M. could switch the tooling to their Holden division in Australia, which hasn't had a new engine for some time.

I can say with certainty at this time that G.M. officials are not convinced that there is a solid, lasting market over here for the small economy car. They're not sure this recent trend away from the big chrome-splattered Detroit product is not just a passing fancy. And, even if they did feel the market would last, there is still much doubt as to its size in years to come. Some Detroit people have said that the big companies could make money on a production volume as low as 200,000 units a year. But if two or three Detroit companies got into the game, along with all the overseas producers, the total small car market would obviously have to absorb close to a million units a year to make it profitable for everyone. This is an entirely different matter from the present sales volume of 250,000 units or so. These are the questions that have the G.M., Ford and Chrysler officials tearing their hair these days.

Meanwhile, Studebaker-Packard are going to follow the American Motors lead and bring out a "medium small" car. They are now in the process of converting tooling for the full-size Scotsman utility model to reduce wheelbase from 116½in to a reported 108in. The main body shell and passenger compartment will be left pretty much as it is, and length will be reduced by shortening the hood and rear deck. The car will undoubtedly look stubby, but it can be called an "economy" car in the same sense as the successful Rambler. The present 101 b.h.p. six-cylinder engine will be retained, and the Studebaker vee-8 will be optional. The car will be ready as a 1959 model in late summer.

The rumour is that S-P officials will drop the full-size Studebaker and Packard lines when they bring out the new Scotsman. This seems logical enough; they have been losing money at the rate of $2 million a month for some time now, while American Motors have climbed out of the red on the sales of the popular Rambler 108 and 100in wheelbase models. And it is significant that things didn't really start to boom for A.M. until they had stopped production on the 117in Ambassador line. These small independents are in a very tough financial position over here . . . and it might just be that the small- and medium-size car will be the key to survival for them.

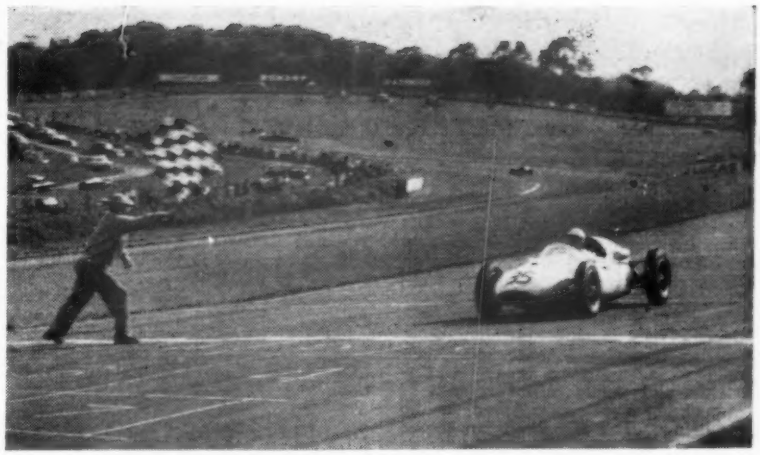
GENERAL MOTORS have finally broken the silence on aluminium engines. A recent statement announces a six-year-old development programme on aluminium vee-8 engines for possible future passenger car use. They say the experimental engines weigh about 30 per cent less than conventional cast iron engines of comparable displacement—which would imply something around 450 lb for a 350 cu in (5.7-litre) engine in the 250-300 b.h.p. range. The release mentioned extensive work on solving the problem of cylinder bore wear, experiments with several methods of plating the bore, and with various aluminium alloys that could be readily cast and would not require plating. No mention was made of using cast iron or steel liners in the cylinders—which would seem to indicate that Detroit won't go for this deal on a volume-production engine. (My other findings support this.)

It is also very significant that, just about the time G.M. announced their aluminium engine programme, the Aluminium Company of America came up with an announcement of a new aluminium alloy containing over 20 per cent silicon that would be "ideal" for an aluminium engine.

Watch this field for an interesting technical battle in the near future—that is, plating *versus* alloy composition for controlling bore wear on aluminium engines.

Incidentally, the G.M. men make no bones of the fact that their interest in aluminium engines is not entirely to save weight. Charles Chayne, engineering V.P., says:

"It goes without saying that the main advantage of aluminium engines is their lighter weight. Beyond that, of course, there are many possibilities in the manufacturing area—aluminium is easier to work than cast iron. Our ultimate target is the building of these engines at less cost than cast iron engines."



Winner of both formula 2 races, Stuart Lewis-Evans is flagged at the conclusion of the second. His Cooper belongs to the British Racing Partnership

BRANDS HATCH

FOR sheer spectacle, some of the short-distance formula 2 races now being held on most weekends in this country have nearly as much to offer—in more concentrated form—as a full formula 1 Grand Prix. Now that fair numbers of these cars have been produced, competition is extremely keen, and the general standard of driving magnificent.

Last Sunday afternoon at Brands Hatch, the B.R.S.C.C. included a formula 2 race in two parts of ten laps each, the best aggregate time deciding the winner. In the first, S. H. Jensen (Cooper) soon lost the initial lead to Ian Burgess (Cooper), while S. Lewis-Evans in the British Racing Partnership's pale green Cooper awaited a suitable chance to overtake them both; this he accomplished at about two-thirds race distance.

Meanwhile, Michael Parkes was introducing David Fry's latest Climax-engined creation to its first race, and on lap four showed it what is meant by "spinning off" on the bottom straight. Thereafter, he continued creditably fast for a first outing, but David Fry admitted that more development is needed before it can mix with the leaders. Unmistakably Fry in conception and detail finish, it has all-independent suspension by rubber-in-tension, a medium which some sceptics seem to mistrust.

In the second formula 2 race Lewis-Evans went away in the lead, but was closely pursued throughout by Dennis Taylor (Lotus), who was in great form. Although neither Taylor nor third man Jensen appeared to gain on Lewis-Evans, they were jointly credited with the fastest lap in 58.2sec—a new course record. This time, the Fry appeared to bang its tail on the deck once or twice, yet retired with a collapsed front suspension.

There were two 21-lap sports car races, qualifying for the *Autosport* series production championship, the first divided into three capacity classes. It was dominated completely by Ian Walker's Lotus Elite, which led throughout—and with consummate ease—from mostly heavier and less elegant metal. This was a most convincing and persuasive exhibition for would-be Elite owners, who now will know what to expect.

Peter Gammon sandwiched his M.G.-engined Elva Courier between Walker and Lawry (in another Elite) to finish second overall. Three fin-tailed Turner 950s and three Berkeley 500s (of which one later retired) occupied the small-capacity class, and lost surprisingly little ground to the larger cars.

In the second production sports car race (1,601 to 3,500 c.c.), the four-cylinder Austin-Healeys of Crabb and Protheroe set off in very energetic pursuit of Dick Stoop's Frazer Nash (complete with towing bracket), and Whiteaway's A.C. Bristol, the Healey engines deep-throated and low-revving in contrast to the Bristol units. By lap six, Healeys lay one and two ahead of Stoop, but at three-quarter distance Crabb's leading car made an expensive noise and stopped. In fact, one by one the field decreased until only four cars were left running at the finish—Protheroe and Stoop, Bond's Frazer Nash and Brightman's Aceca Bristol saloon.

C. Bristow's Hume-Elva had the ill luck to burst a water hose while leading the up-to-1,100 sports car race (ten laps) at half-distance—and Foster did a high-speed reversing test along the bottom straight to bend his Lotus sadly against an earth bank. Greene's Lotus led Mackenzie-Low's Elva past the chequered flag by a hundred yards.

After a poor start from the front row of the grid, Tommy Sopwith (Jaguar 3.4), in bright red shirt and with safety harness over the shoulders, had to work very hard to catch and overtake Baillie's similar car during the final lap. Jack Sears' A.105 had no opposition in his capacity class, but seemed rather slower than usual.

Not unexpectedly, John Sprinzel's A.35 took charge of the race of small saloons. Dr. Shepherd in another Austin drove desperately to catch him, but a transmission whine of ever-increasing intensity led to his inevitable and sudden retirement on lap seven, a fate shared with Adler's Skoda 440 which had neither looked nor sounded particularly happy.

Of the two formula 3 races, the senior was, naturally, much the faster, but soon became a well-spaced procession with No. 1, Trevor Taylor's Beart-Cooper, appropriately leading.

PROVISIONAL RESULTS
(lap distance 1.24 miles)

Formula 2 Race. Part One (10 laps): 1, Cooper (S. Lewis-Evans), 9min 58.8sec, 74.55 m.p.h.; 2, Cooper (I. Burgess), 3, Cooper (S. H. Jensen). **Fastest lap:** Lewis-Evans and Burgess, 58.8sec, 75.92 m.p.h. **Part Two** (10 laps): 1, Cooper (S. Lewis-Evans), 9min 52.8sec, 75.31 m.p.h.; 2, Lotus (D. Taylor); 3, Cooper (S. H. Jensen). **Fastest lap:** Taylor and Jensen, 58.2sec, 76.7 m.p.h. (new class and course record). **Aggregate results** (Parts One and Two added): 1, S. Lewis-Evans, 19min 51.6sec, 74.93 m.p.h.; 2, D. Taylor; 3, I. Burgess.

Series Production Sports Car Race (21 laps): **Up to 1,000 c.c.:** 1, Turner 948 (J. P. Baldam), 20 laps, 60.57 m.p.h.; 2, Turner 948 (A. J. Nurse); 3, Turner 948 (B. A. M. Gilbert). **1,001 to 1,300 c.c.:** 1, Lotus Elite 1,220 (I. Walker), 24min 11sec, 64.61 m.p.h.; 2, Lotus Elite 1,220 (J. Lawry). **1,301 to 1,600 c.c.:** 1, Elva Courier 1,489 (P. Gammon), 24min 23.4sec, 64.06 m.p.h.; 2, M.G. A 1,489 (K. W. Mackenzie); 3, M.G. A 1,489 (J. Hayles).

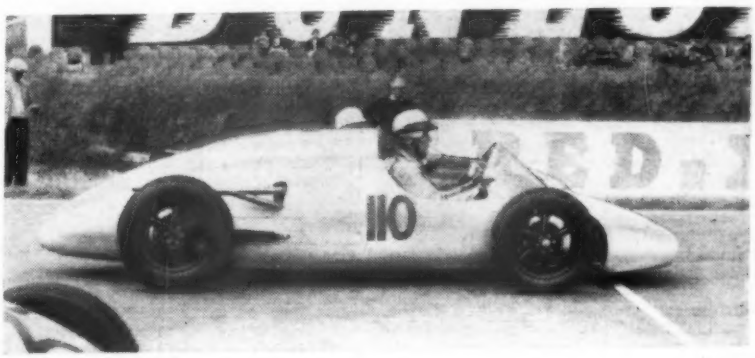
Up to 1,100 c.c. Sports Car Race (10 laps): 1, Lotus 1,098 (K. A. Greene), 10min 32.4sec, 70.59 m.p.h.; 2, Elva 1,098 (R. Mackenzie-Low); 3, Lotus 1,098 (G. M. Jones). **Fastest lap:** Mackenzie-Low, 1min 1.6sec, 72.47 m.p.h.

Series Production Sports Car Race. 1,601 to 2,500 c.c. (21 laps): 1, Austin-Healey 2,660 (R. Protheroe), 23min 33.4sec, 66.33 m.p.h.; 2, Frazer Nash 1,971 (J. R. Stoop); 3, Frazer Nash 1,971 (M. E. S. Bond). **Fastest lap:** Protheroe, 1min 5.4sec, 68.26 m.p.h.

Junior Formula 3 Race (10 laps): 1, Petty Norton (J. Menzies), 10min 57.6sec, 67.88 m.p.h.; 2, Cooper Norton (A. J. C. Newton); 3, Cooper Norton (R. F. Mayne). **Fastest lap:** Menzies, 1min 5.8sec, 69.97 m.p.h.

Senior Formula 3 Race (10 laps): 1, Beart-Cooper (T. Taylor), 10min 13.4sec, 72.61 m.p.h.; 2, Cooper Norton (T. Bridger); 3, Cooper Norton (D. Parker. **Fastest lap:** Taylor, 1min, 74.4 m.p.h.

Saloon Car Race A. up to 1,200 c.c. (10 laps): 1, Austin A.35 948 (J. Sprinzel), 12min 40.2sec, 58.72 m.p.h.; 2, Morris 1000 948 (F. W. Marriott); 3, Austin A.35 948 (L. A. Adams). **Fastest lap:** Sprinzel, 74.4sec, 60 m.p.h. **Saloon Car Race B** (10 laps): **Over 2,701 c.c.:** 1, Jaguar 3.4 3,442 (T. E. B. Sopwith), 11min 42.2sec, 63.3 m.p.h.; 2, Jaguar 3.4 3,442 (Sir G. Baillie). **1,601 to 2,700 c.c.:** 1, Austin A.105 2,639 (J. G. Sears), 12min 25sec, 59.92 m.p.h. **1,201 to 1,600 c.c.:** 1, Borgward 1,493 (T. Bridger), 12min 27.6sec, 59.71 m.p.h.; 2, M.G. Magnette 1,489 (A. T. Foster); 3, Wolseley 1500 1,489 (H. R. Vincent). **Fastest lap:** Sopwith, 1min 8.2sec, 65.45 m.p.h.



A new profile for formula 2: Michael Parkes awaits the starter's signal in the rear-engined Fry, which has rubber springing

The Sport

By PETER GARNIER

EUROPEAN G.P.

TOUR DE FRANCE

ROUEN

ON SUNDAY—the day after tomorrow—comes the Belgian Grand Prix at Spa, which, this year, has the honour of being the European Grand Prix. The race will be run over 24 laps of the 8.76-mile circuit (211.24 miles), and is the fourth event to count towards the 1958 Drivers' Championship; previous three were the Argentine, Monaco and Dutch Grands Prix. Positions in the Championship, and points gained at each of the counting events, are given in the table below. The formula 1 lap record for the Spa-Francorchamps circuit stands at 4min 14sec (124.01 m.p.h.), set up by Moss' Maserati in 1956, the last time the Belgian G.P. was held. Since then, however, the circuit has been resurfaced in parts, widened, and the difficult left-hander through the Eau Rouge bridge eased. One result was that in the sports car G.P. of the R.A.C. of Belgium last August, Olivier Gendebien in a factory-entered 4.1-litre Ferrari set up a fastest lap in 4min 9.8sec (126.27 m.p.h.), comfortably bettering the record for Grand Prix cars. Sunday's race, therefore, should be one of the fastest Grands Prix ever run.

The race is due to start at 4 p.m., and should finish at about 5.45 p.m. Broadcasts of the race will be given over the B.B.C. Light Programme at 4.25, 5.10 and 5.45 p.m. Probable entries for the race are as follows:

Vanwall: Moss, Brooks and Lewis-Evans. *B.R.M.:* Behra, Schell and Trintignant. *Cooper:* Brabham and Salvadori. *Lotus:* Hill and Allison. *Ferrari:* Collins, Hawthorn, Musso, and von Trips or Frère. *Maserati:* Gould, Gregory, Bonnier, Scarlatti and Godia.

WORLD CHAMPIONSHIP

Driver	Argentine	Monaco	Dutch	Total
Stirling Moss	8	—	9	17
Luigi Musso	6	6	—	12
Harry Schell	1	2	6	9
Maurice Trintignant	—	8	—	8
Mike Hawthorn	4	1	2	7
Jean Behra	2	—	4	6
Juan Fangio	4	—	—	4
Peter Collins	—	4	—	4
Jack Brabham	—	3	—	3
Roy Salvadori	—	—	3	3
Cliff Allison	—	1	1	2

TOUR DE FRANCE dates have now been moved forward a day; instead of starting on 13 September, the Tour will leave Nice on 14 September, finishing at Pau, some 3,600 miles later, on 21 September. This change has been made so as to allow time for British (and other) competitors who are driving in the Tourist Trophy at Goodwood on 13 September to fly down to Nice for the start. Even so, it will mean a bit of a rush; last year the Tour started at 7 a.m. on the Sunday morning—the day after the B.R.D.C.-*Daily Express* Silverstone meeting (which had been postponed due to fuel rationing). This meant that competitors in the Tour had to leave Silverstone, catch a plane from London Airport, and arrive in Nice at around 2 a.m. on the Sunday morning, five hours or so before setting out on the Tour. It looks as though there will be a similar scamper this time.

The Tour will be divided into four stages (instead of three): Nice to Le Touquet, Le Touquet to Le Mans, Le Mans to Clermont Ferrand, and Clermont Ferrand to the finish at Pau. Included in this will be six high-speed circuit tests and four hill-climbs, as last year. Regulations (from La Fédération Francaise des Sports Automobiles, 10, Faubourg Montmartre, Paris IX) will shortly be available.

RON FLOCKHART'S injuries resulting from his crash into an ambulance during practice at Rouen last week are not so serious as early reports suggested. His condition is said to be good, the trouble being confined to cracked ribs and concussion. He expects to be out of hospital in well under a week's time—and may even be fit to drive at Le Mans, though this will depend on the hospital report and on the decision of the Le Mans medical authorities. Peter Ashdown, too, is getting on well.

AT A PRE-MONZA lunch given by the Firestone Tyre Company early this week, Henry Richard, of the company's American organization, suggested that the National Hot Rod Association is planning to send over three dragsters for the Brighton Speed Trials this year. Though the prospect of seeing these fabulous devices in action in this country is more than interesting, it seems that to unleash their tremendous power on Madeira Drive will be very risky. By the end of a standing kilometre the fastest of these machines are doing around 180 m.p.h., and over the intervening ground their front wheels must be barely in contact with the ground; just how they would steer round the slight right-hand curve in such conditions and, worse still, stop at the end of the kilometre, goodness knows.

Though everything should be done to encourage and help the American drivers to bring their cars over, I can't help feeling that there must be somewhere more suitable for their performance than Brighton.

AT LUCERNE, where the C.S.I. foregathered last week, there was still no decision over the much-discussed question of formula 2 fuel (compulsorily 100-130 p.n. Avgas, or of a rating not *exceeding* 100-130 p.n., in which case would pump fuel be allowed?). In its report of the meeting the C.S.I. says that it has been proposed that the use of Avgas for formula 2 racing cars instead of pump fuel should be made optional The proposal, they say, will be submitted to the national bodies of all countries in which formula 2 cars are raced.

Thus does the C.S.I. conduct the affairs of motor racing. At the Lucerne meeting, presumably, delegates were present from all the national bodies represented on the C.S.I. . . . would it not have been possible to obtain their opinions at the meeting, instead of causing this entirely unnecessary delay? The next meeting is not until September, by which time the season will be over.

The only thing that does emerge from this decision is that, as they stated originally, the C.S.I. does intend that 100-130 p.n. Avgas should be used obligatorily by formula 2, rather than fuels not exceeding this specification.

Oh yes; and they are talking of making the new formula 1 (nothing definite, mind you; it's a couple of years before it takes effect) 750 c.c., unsupercharged. That should keep the crowds away.

BECAUSE OF an error in the English text of the regulations for this year's Coupe des Alpes (Alpine Rally hitherto), some confusion has arisen over the question of times and dates for scrutineering and sealing before the start. These will take place—at times allotted to each entrant—during the following period: From 2 p.m. on Friday, 4 July, to 10 a.m. on Monday, 7 July. Entries for the Alpine (at single fees) close on 15 June; at the increased fee they close on 23 June.

FOLLOWING THE formula 2 event at Brands Hatch last weekend (fourth of the qualifying events), the positions in *The Autocar* Formula 2 Championship are as follows: 1, C. A. S. Brooks, 17 points; 2, S. Lewis-Evans, 15; 3 (equal), G. Hill and I. Burgess, 8; 5, C. Allison, 5; 6, T. Bridger 4½; 7 (equal), J. Brabham and B. McLaren, 3; 9, D. Taylor, 2; 10 (equal), I. Bueb and J. Russell, 1; 12, G. Wicken, ½.

In the issue of 30 May, following the Whit Monday Crystal Palace meeting, Les Leston (who has no points) was mysteriously credited with Cliff Allison's 5 (and his fifth place in the table)—whereas Allison, equally mysteriously, was omitted altogether . . . anyway, it's right this time!

TWO WEEKS AFTER Le Mans comes the scarcely less ambitious, three-race meeting at Rheims (5 and 6 July), which includes the French G.P. First event of the meeting is the 12-hour race for Appendix J *Gran Turismo* cars, as last year. They will run in the following classes: 501 to 750 c.c., 751 to 1,000 c.c., 1,001 to 1,300 c.c., 1,301 to 2,000 c.c. and over 2,000 c.c.—which indicates that, once again, there will be that wide discrepancy in performance which has been so much criticized in the past—particularly night—events. The start of this race will be Le Mans style, at midnight on 5 July, and the finish will be at noon on the 6th.

Next comes the 30-lap (249.0525 km, or 154.76 miles) race for formula 2 (unsupercharged racing cars of up to 1,500 c.c.), to start at 2.15 p.m. on 6 July. This race will be the first of this year's qualifying events for *The Autocar* Formula 2 Championship to be held on foreign soil. Finally comes the French Grand Prix, held over 50 laps of the 5.158-mile circuit (total distance 257.9 miles or 415.087 km); this event will start at 4 p.m. on 6 July.

Practice periods for the three events will be on Wednesday, Thursday and Friday, 2, 3 and 4 July, at times to be announced later—in a supplement to the regulations.

The Sport

RESULTS OF the Rouen three-hour race for sports cars up to 1,500 c.c., held last Sunday, are as follows:—

1, Porsche 1,500 (J. Behra), 87.52 m.p.h.; 2, Lotus 1,500 (G. Hill); 3, Lotus 1,100 (A. Stacey); 4, Lotus 1,100 (I. Ireland); 5, Lotus 1,100 (Hicks); 6, Porsche 1,500 (Veuillet); 7, Lotus 1,100 (Vidilles); 8, Osca 750 (Haskell-de Tomaso); 9, Elva 1,100 (Hall); 10, Lotus 1,100 (Piper).

Winners of the 1,500 c.c., 1,100 c.c. and 750 c.c. classes respectively were Porsche (J. Behra), Lotus (A. Stacey) and Osca (Haskell-de Tomaso). Fastest lap was put up by Behra's Porsche in 2min 37.9sec (92.68 m.p.h.); Stacey's best lap in the 1,100 c.c. Lotus was in 2min 46.1sec, and de Tomaso's (750 Osca) 2min 57.3 sec.

FURTHER WORKS entries for the Swedish Rally to the Midnight Sun on 11 to 13 June include an M.G. A to be driven by Pat Moss and Ann Wisdom, and an Austin A.35 with John Sprinzel and Lutz Arnstein as drivers. Pat Moss is at present only one point behind Mme M. Blanchoud in the Ladies' Section of the European Touring Championship.

COMING SHORTLY

JUNE 14.—Leeds University Union M.C., Rag Week driving tests, Woodhouse Moor, Leeds, 2.30 p.m.
14.—B.A.R.C., Goodwood Members' meeting, 2 p.m.
14-15.—Warrington and District M.C., June Night Rally, Tall Trees Garage, Lower Whitley, 12 midnight.
14-15.—Birmingham Y.C.M.C., Border Rally, Civic Centre, Birmingham, 8 p.m.
15.—Thames Estuary A.C., speed trial, Brands Hatch, 10 a.m.
15.—Yorkshire S.C.C. and B.A.R.C., E. A. Denny sporting rally, Pateley Bridge, 10 a.m.
15.—B.A.R.C. (S.W. Centre), *Concours d'Elégance*, Mayflower Park, Southampton, 2 p.m.
15.—**European Grand Prix, Spa, Belgium.**
15.—Southsea M.C., Cannon Cup rally, Portsbridge, Portsmouth, 10 a.m.
15.—Mid-Surrey A.C., driving tests, Fair Oaks Aerodrome, Woking, 10.30 a.m.
15.—Circle C.C., driving tests, Mill Green Camp, Hatfield.
15.—Lancashire and Cheshire C.C., Captain Stott Trophy rally, Rising Sun, Gawsworth, 2 p.m.
15.—Cambridge 50 C.C., speed trial, Witchford Airfield, Ely, Cambridgeshire.
15.—Singer O.C., driving tests, Heston Airport, 11 a.m.
19.—Triumph S.O.A., *Concours d'Elégance*, Welcombe Hotel, Stratford-upon-Avon, 7 p.m.
21.—Chester M.C., spring trials, Queensferry, 2 p.m.
21.—B.A.R.C., Eastbourne Rally, Eastbourne, 10 a.m.
21.—Loughborough College M.C., *Concours d'Elégance*, College grounds.
21-22.—Sevenoaks and District M.C., Kent rally, Black Eagle Hotel, Halstead, 9 p.m.
21-22.—Eastwood and District M.C., rally, Marshall and Sons, Hucknall Lane, Bulwell, Nottingham, 10.30 p.m.
21-22.—Sunbeam Register, Wolverhampton rally, driving tests, Pendeford Aerodrome, 10 a.m.
21-22.—North London E.C.C., Radcap Rally, Waters Garage, Hatfield, 10 p.m.
21-22.—Harrow C.C., Mini-Rally, Borehamwood, 10 p.m.
21-22.—**Le Mans 24-hour race, France.**
22.—Lancia M.C., driving tests, Stapleford Tawney Aerodrome 10.30 a.m.
22.—Forces M.C., Midsummer rally, Farley Heath, 3 p.m.
22.—Margate and District C.C., driving tests, Monkton, near Ramsgate, 2 p.m.
22.—Wolverhampton and South Staffs C.C., Midsummer rally, Worfruna Garage, Worfield, near Bridgnorth, 9.30 a.m.
22.—M.C. C.C., driving tests, Heston Aerodrome, 11.30 a.m.
29.—**Monza 500 miles race, Italy.**
JULY 5.—**Rheims 12-hour race, France.**
6.—**Grand Prix de l'A.C.F., Rheims, France and Formula 2 race.**

RACE AND RALLY REGULATIONS RECEIVED

B.R.D.C.—Silverstone meeting, 19 July. Regulations for the 500 c.c. sports and touring car races are now available from J. Eason-Gibson, B.R.D.C., 9, Down Street, London, W.1.

Riley Register.—Second Coventry Rally, 5-6 July. A two-day rally for pre-1938 Coventry-built Rileys, with a treasure hunt and social gathering on Saturday, and driving tests and a *concours d'élégance* on Sunday. Further information from M. Dunkley, 15, George Street, Rugby.

B.A.R.C.—Mallory Park members' meeting, 28 June, with events for saloon, sports and racing cars. Entries to H. J. Morgan, B.A.R.C., 55, Park Lane, London, W.1, by 17 June. Entry fee £2 2s per race.

R.S.A.C.—National hill climb, Rest-and-be-Thankful, 5 July. Racing and sports cars will be divided into eight classes. This event qualifies for the R.A.C. British Hill Climb Championship. Entries to A. K. Stevenson, R.S.A.C., Blythswood Square, Glasgow, C.2, by 23 June. Entry fee £1 1s.

Highland C. and M.C.C.—June Rally. 28 June, over a route of 250 miles starting from Delmore Roadhouse, near Inverness. Cars will be divided into four classes and entries should be sent to W. Munro, 9a, Culduthel Road, Inverness, by 24 June. Entry fee 10s.

Eastern Counties M.C.—National race meeting, Snetterton, 29 June, with events for saloon, sports and 500 c.c. racing cars. Entries to T. L. V. Brown, Red House Farm, Dennington, Woodbridge, Suffolk, by 23 June. Entry fee £2 per event.

Wolverhampton and South Staffs C.C.—Midsummer rally, 22 June, over 250-mile course starting from Worfield, near Bridgnorth. Entries, restricted to 75, to A. J. Martin, 131, Coalway Road, Wolverhampton, by 16 June. Entry fee £1 5s, team 10s.

Westmorland M.C.—Night navigation rally, 28-29 June, starting from Kendal Rugby Club car park at 10 p.m. The route is over 180 miles in the Lake District. Cars will be divided into four classes. Entries, limited to 75, to N. C. Richmond, 24 Spital Park, Kendal, by 20 June. Entry fee £1 10s.

Herts County A. and A.C.—Westbrook Hay National Speed Hill Climb, 12 July. There will be 13 classes for saloon, sports and racing cars. Entries to E. R. Sturt, Chandos Press, Ltd., South Road, Edgware, Middlesex, by 1 July. Entry fees—non-members of Herts County Club £2, £2 10s to 7 July; members, £1 12s 6d, £2 10s to 7 July.

M.C.C.—Speed trial, 6 July, at Brands Hatch circuit. Course will be two laps of 1.24 miles in a clockwise direction. Classes for saloon and sports cars. Entries to S. G. Cobban, 6/10, Birkbeck Road, Ilford, by 30 June. Entry fee £1 10s.

Hants and Berks M.C.—National Speed Hill Climb, 2 August, Great Auclum, Burghfield Common. Classes for sports, racing and turbine-engined cars. Entries to A. H. S. Fountain, 51, Matlock Road, Caversham, Reading, by 21 July. Entry fee £1 15s.

West Essex C.C.—Three Jolly Wheelers rally, 28 June, starting from Three Jolly Wheelers, Woodford Bridge, Essex, at 6 p.m. There will be classes for experts and novices. Entries to A. E. Hudson, 129, Pemboroke Road, Seven Kings, Essex. Entry fee £1 per car, 15s per team.

Midlands M.E.C.—Restricted race meeting, 21 June, Silverstone circuit. There will be eight events for racing, sports and closed cars, run over the 1.608-mile circuit. Entries to L. Hill, 100, Prospect Lane, Solihull, Warwickshire, by 11 June. Entry fee £2 for first event and £1 15s for each subsequent event.

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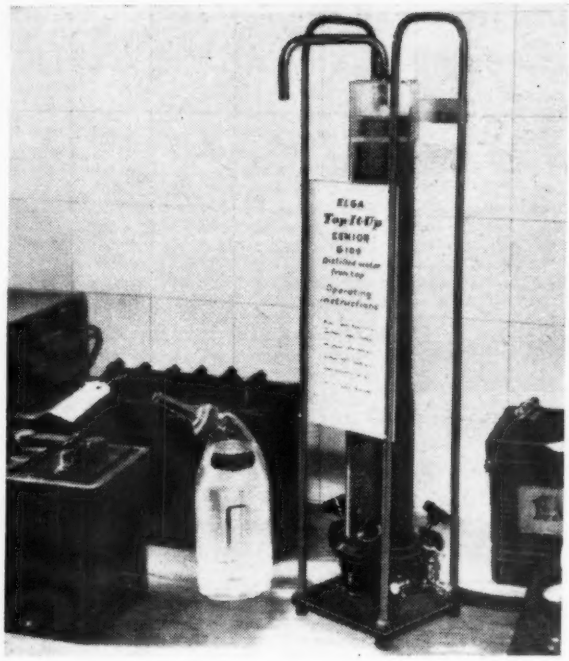
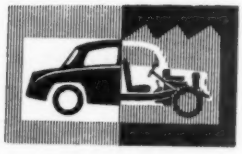


Distilled water can be provided at tap speed by this Elga unit made by Deionisation (Elga), Ltd., Railway Place, London, S.W.19. Ordinary tap water passes through a column of ion exchange resins which remove solid content. Deionised water is recognised as distilled by the British Pharmacopoeia

Trade and  *Industry*

Four service stations dispensing Regent products have been opened in and around Belfast. They are on Lisburn Road, Finaghy; Antrim Road, Bellevue; York Road, Belfast; and Belfast Road, Bangor.

New premises were opened on Wednesday, 4 June, at Dartford, Kent, on the A2 road, by B. S. Gelston and Co., Ltd., who have been appointed distributors for Austin and Rover cars. The new premises incorporate extensive workshops and an Esso filling station.

The chairman of the United States Rubber Co., Mr. H. E. Humphreys, Jr., visited the United Kingdom to take the chair at the annual general meeting of the North British Rubber Co., Ltd., on 26 May. The parent company has 56 factories employing some 65,000 people.

A new company, F. Perkins Kundendienst G.m.b.H., has been formed by F. Perkins, Ltd., at Hanauerstrasse 43, Aschaffenburg, Germany, to improve after-sales service for the thousands of Perkins diesel engines operating in that country. Sales activities will continue to be directed from Peterborough.

A survey by the Champion Sparking Plug Co., Ltd., has shown that motorists are primarily concerned with—1, performance; 2, economy; 3 starting efficiency; that motorists on the roads today are still using old plugs which have already covered over 10,000 miles; and that approximately 50 per cent of all plugs purchased by motorists are bought retail and fitted by them personally.

Mr. F. G. L. Lyne has been appointed manager of Egertons (Ipswich), Ltd., and of that company's associated interests in Suffolk. The appointment anticipates the retirement of Mr. H. H. Amos, general manager of Egertons since the business was acquired by Lex Garages, Ltd.

Mr. S. H. Edge has been appointed general sales manager in the midlands and north of England by Alford and Alder (Engineers), Ltd., Newton and Bennett, Ltd., and Power Jacks, Ltd. He is also vehicle consultant to the Clayton Dewandre Co., Ltd., and Lincoln and British Trailer Co., Ltd., of Manchester.

Mr. F. A. Thiel has been appointed area manager for the West of England, South Wales and Eire by the garage equipment division of Laycock Engineering, Ltd. Mr. G. Affleck is area manager for the North of England, Scotland and Northern Ireland, and Mr. H. C. South has been appointed sales supervisor for Yorkshire, Lancashire and North Wales.

Information Sought

Correspondence, addressed c/o *The Autocar*, can be forwarded on behalf of readers seeking the following handbooks and information:

No. 17434. 1949-54 2-litre A.C.
"G.C.R."—All available information, including performance and consumption figues.

No. 17435. Handbooks Required.
"W.G."—1939 14-60 h.p. Wolseley handbook or workshop manual.
"I.G."—1938 Series III 25 h.p. Wolseley
"E.G."—1936 Wolseley Wasp.

NEW CAR PRICES

	U.K. List Price · With Tax					
	£	s	d	£	s	d
A.C.						
Ace	1,188	0	0	1,783	7	0
Ace-Bristol	1,443	0	0	2,165	17	0
Aceca	1,446	0	0	2,170	7	0
Aceca-Bristol	1,700	0	0	2,551	7	0
ALFA ROMEO						
Giulietta	1,278	0	0	1,918	7	0
Giulietta TI	1,395	0	0	2,093	17	0
Giulietta Veloce	1,798	0	0	2,698	7	0
1900 Super	1,665	0	0	2,498	17	0
Super Sprint	2,250	0	0	3,376	7	0
ALLARD						
Palm Beach (Ford)	1,050	0	0	1,576	7	0
Palm Beach (Jaguar)	1,300	0	0	1,951	7	0
Gran Turismo	1,700	0	0	2,551	7	0
ALVIS						
Sports saloon 3-litre	1,995	0	0	2,993	17	0
Convertible	2,195	0	0	3,293	17	0
AMBASSADOR						
Super 4-door	1,630	0	0	2,446	7	0
Estate car	1,725	0	0	2,588	17	0
Custom 4-door	1,700	0	0	2,551	7	0
Country estate car	1,795	0	0	2,693	17	0
ARMSTRONG SIDDELEY						
Sapphire 346	1,100	0	0	1,651	7	0
(automatic)	1,195	0	0	1,793	17	0
Limousine	1,910	0	0	2,866	7	0
(automatic)	2,099	0	0	3,149	17	0
ASTON MARTIN						
DB Mk. III	2,050	0	0	3,076	7	0
Drop-head coupé	2,300	0	0	3,451	7	0
ASTRA						
Utility	308	0	0	471	16	0
AUSTIN						
A.35 2-door	379	0	0	569	17	0
2-door de luxe	387	15	0	582	19	6
A.35 4-door	396	10	0	596	2	0
4-door de luxe	400	0	0	601	7	0
Countryman	444	0	0	667	7	0
A.55 Cambridge	538	0	0	808	7	0
A.55 de luxe	570	0	0	856	7	0
A.95 Westminster	689	0	0	1,034	17	0
A.95 de luxe	719	0	0	1,079	17	0
Countryman	834	0	0	1,252	7	0
A.105	823	0	0	1,235	17	0
(automatic)	885	10	0	1 329	12	0
Vanden Plas	982	10	0	1,475	2	0
(automatic)	1,045	0	0	1,568	17	0
Gipsy	650	0	0	650	0	0
(diesel)	755	0	0	755	0	0
AUSTIN-HEALEY						
Sprite	455	0	0	678	17	0
100-Six	817	0	0	1,226	17	0
BENTLEY						
Series S	3,695	0	0	5,543	17	0
L.W.B.	4,595	0	0	6,890	17	0
Freestone and Webb	5,187	0	0	7,781	17	0
Hooper	4,990	0	0	7,486	7	0
H. J. Mulliner	5,455	0	0	8,183	17	0
James Young	4,915	0	0	7,373	17	0
Continental						
H. J. Mulliner	5,275	0	0	7,913	17	0
Four door	5,355	0	0	8,033	17	0
Park Ward	4,995	0	0	7,493	17	0
BERKELEY						
Two-seater 328 c.c.	332	7	6	490	18	3
492 c.c.	381	15	4	573	19	10
Hardtop	397	14	7	597	18	11
B.M.W.						
501 2.6	1,638	0	0	2,458	7	0
502 2.6	1,792	0	0	2,687	7	0
502 3.2	1,970	0	0	2,956	7	0
502S 3.2	2,165	0	0	3,248	17	0
503	3,500	0	0	5,251	7	0
BORGWARD						
Isabella	830	0	0	1 246	7	0
Estate car	880	0	0	1,321	7	0
Touring sport	950	0	0	1,426	7	0
TS coupé	1,330	0	0	1,996	7	0
BRISTOL						
405	2,390	0	0	3,586	7	0
Convertible	2,450	0	0	3,767	7	0
BUICK						
63 Century	2,175	0	0	3,263	17	0
CADILLAC						
6309 Fleetwood	3,425	0	0	5,138	17	0
6239D sedan de ville	3,125	0	0	4,688	17	0
CHEVROLET						
Bel-Air	1,410	0	0	2,116	7	0
Sport	1,440	0	0	2,161	7	0
Convertible	1,555	0	0	2,333	17	0
Nomad estate car	1,500	0	0	2,251	7	0
Corvette	1,906	0	0	2,860	7	0
CHRYSLER						
300C	2,740	0	0	4,111	7	0
Convertible	2,960	0	0	4,441	7	0
Imperial	2,885	0	0	4,328	17	0
Crown	3,045	0	0	4,568	17	0
CITROEN						
2 c.v.	398	0	0	598	7	0
ID19	998	0	0	1,498	7	0
DS19	1,150	0	0	1,726	7	0
DAIMLER						
One-O-Four	1,595	15	4	2,395	0	0
DK400A	2,795	15	4	4,195	0	0
DK400B	2,875	15	4	4,315	0	0
Hooper limousine	4,385	0	0	6,578	17	0

	U.K. List Price · With Tax					
	£	s	d	£	s	d
D.B.						
Rally HBR 5	1,299	2	0	1,950	0	0
DELLOW						
Mark VI	575	0	0	862	17	0
Mark VI sports	625	0	0	933	7	0
D.K.W.						
Fixed-head coupé	765	0	0	1,148	17	0
Four-door saloon	798	0	0	1,198	7	0
Universal estate car	830	0	0	1,246	7	0
100 fixed-head coupé	850	0	0	1,276	7	0
DODGE						
Custom Royal	2,040	0	0	3,061	7	0
EDSEL						
Pacer-four-door	1,635	0	0	2,453	17	0
Corsair	1,991	0	0	2,987	17	0
Citation hardtop	2,100	10	0	3,152	2	0
FACEL VEGA						
FVS hardtop	3,150	0	0	4,726	7	0
(automatic)	2,980	0	0	4,471	7	0
FAIRTHORPE						
Atomota	426	0	0	640	7	0
Electron Minor	479	0	0	719	17	0
Electron Mk. II	769	0	0	1,154	17	0
FIAT						
500	350	0	0	526	7	0
500 de luxe	370	0	0	556	7	0
600	432	0	0	649	7	0
Convertible	452	0	0	679	7	0
Multipla 4/5	532	0	0	799	7	0
Multipla 6	540	0	0	811	7	0
1100	578	10	0	869	2	0
1200 Full Light	798	10	0	1,199	2	0
1400B	774	0	0	1,162	7	0
1900B	980	0	0	1,471	7	0
1900B Full Light	1,385	0	0	2,078	17	0
FORD						
Popular	295	0	0	443	17	0
Anglia	380	0	0	571	7	0
Anglia de luxe	400	0	0	601	7	0
Prefect	415	0	0	623	17	0
Prefect de luxe	438	0	0	658	7	0
Escort	434	0	0	652	7	0
Squire	463	0	0	695	17	0
Consul	545	0	0	818	17	0
Consul de luxe	580	0	0	871	7	0
Convertible	660	0	0	991	7	0
Estate car	760	0	0	1,141	7	0
Zephyr	610	0	0	916	7	0
(automatic)	725	0	0	1,088	17	0
Convertible	778	0	0	1,168	7	0
Estate car	825	0	0	1,238	17	0
Zodiac	675	0	0	1,013	17	0
(automatic)	790	0	0	1,186	7	0
Convertible	873	0	0	1,310	17	0
Estate car	895	0	0	1,343	17	0
FORD (American)						
Thunderbird hardtop	2,133	10	0	3,201	12	0
FORD (Canadian)						
Custom 300	1,307	0	0	1,961	17	0
Fairlane 500 Town	1,377	0	0	2,066	17	0
500 Town Victoria	1,409	0	0	2,144	17	0
Ranch Wagon	1,362	0	0	2,044	7	0
FORD (Germany)						
12M	702	0	0	1,054	7	0
15M	763	0	0	1,145	17	0
FRAZER NASH						
Gran Turismo	2,500	0	0	3,751	7	0
Sebring	2,500	0	0	3,751	7	0
GOGGOMOBIL						
T.300	329	0	0	494	17	0
T.400	342	6	0	514	16	0
TS.300	416	0	0	625	7	0
Convertible	458	0	0	688	17	0
TS.400	428	13	4	644	7	0
Convertible	471	0	0	707	17	0
HILLMAN						
Minx II Special	498	0	0	748	7	0
Minx II de luxe	529	0	0	794	17	0
Convertible	598	0	0	898	7	0
Estate car	625	0	0	938	17	0
Husky	465	0	0	698	17	0
HUMBER						
Hawk	840	0	0	1,261	7	0
(automatic)	955	0	0	1,433	17	0
Estate car	975	0	0	1,463	17	0
Touring limousine	920	0	0	1,381	7	0
IGETTA (Gt. Britain)						
300	232	8	5	349	19	6
600	319	0	0	479	17	0
JAGUAR						
2.4	996	0	0	1,495	7	0
Special equip. model	1,019	0	0	1,529	17	0
3.4	1,114	0	0	1,672	7	0
XK 150 hardtop	1,175	0	0	1,763	17	0
(automatic)	1,303	0	0	1,955	17	0
Special equip. model	1,292	0	0	1,939	7	0
Convertible	1,195	0	0	1,793	17	0
Roadster	Export only					
Mark VIII	1,219	0	0	1,892	17	0
(automatic)	1,331	0	0	1,997	17	0
JENSEN						
541	1,435	0	0	2,153	17	0
541 de luxe	1,750	0	0	2,626	7	0
541 R	1,910	0	0	2,866	7	0
Interceptor	1,800	0	0	2,701	7	0
LAGONDA						
3-litre	1,995	0	0	2,993	17	0

(Continued overleaf)

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WOLSELEY

Distributors

offer :

1955 **ARMSTRONG SIDDELEY** Sapphire saloon in green, heater, radio, one owner £795

1956 **HILLMAN** Minx Series I saloon de luxe, one owner, only 12,000 miles £665

1956 **JAGUAR** Mk. VII saloon in grey, automatic gearbox, one owner £1,195

1954 Model **JAGUAR** Mk. VII saloon in grey, supplied and serviced by us for one owner £695

1955 **RENAULT** 750 saloon in fawn, one owner £435

1955 **RILEY** Pathfinder saloon in green, radio, heater, one owner £745

1955 **ROVER** 90 saloon in black, radio, supplied and serviced by us for one owner £995

1952 Model **SUNBEAM-TALBOT** 90 Mk. 2 saloon, radio, heater £495

1955 **VAUXHALL** Wyvern in grey, with red upholstery, one owner £495

1955 **WOLSELEY** 4/44 saloon in grey, supplied and serviced by us for one owner £635

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(Signed) J. Johnson,
East Nigeria, 23.2.58

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1956	**M.G.** A 2-seater	£775
1957	**Vauxhall** Cresta	£765
1956	**Morris** Oxford T/er	£695
1957	**Renault** Dauphine	£665
1957	**Austin** A50 saloon	£635
1956	**Austin** A50 saloon	£595
1955	**Austin** A50 saloon	£565
1955	**Hillman** Minx saloon	£510
1956	**Morris** Minor saloon	£495
1954	**Austin** A40	£455
1954	**Austin** A30 4-door	£395
1952	**Triumph** Renown	£395

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NEW CAR PRICES

U.K. List Price · With Tax

	£	s	d	£	s	d
LANCIA						
Appia Series II	1,125	0	0	1,668	17	0
Aurelia Gran Turismo	2,230	0	0	3,346	7	0
Flaminia	2,500	0	0	3,751	7	0
LINCOLN						
Capri	2,600	0	0	3,901	7	0
Première	2,869	10	0	4,305	12	0
Continental hardtop	3,142	10	0	4,715	2	0
LLOYD						
LP 600	390	0	0	586	7	0
LC 600 Cabrio	427	0	0	641	17	0
LS 600 Combi	405	0	0	608	17	0
LOTUS						
Seven	690	0	0	1,036	7	0
Elite	1,306	0	0	1,951	7	0
Sports	1,021	0	0	1,511	2	0
Club	1,309	0	0	1,937	7	0
Le Mans 75	1,625	0	0	2,405	4	0
MEADOWS						
Frisky	299	0	0	449	17	0
Friskysport	322	0	0	484	7	0
MERCEDES-BENZ						
180	1,195	0	0	1,793	17	0
180D (diesel)	1,295	0	0	1,889	17	0
190	1,250	0	0	1,876	7	0
190SL	1,930	0	0	2,896	7	0
219	1,430	0	0	2,146	7	0
220S	1,595	0	0	2,393	17	0
300 (automatic)	3,600	0	0	5,401	7	0
300SL Roadster	3,750	0	0	5,626	7	0
MERCURY (American)						
Medalist	1,503	0	0	2,255	17	0
Monterey	1,561	10	0	2,343	12	0
Montclair	1,888	0	0	2,833	7	0
Parklane	2,244	10	0	3,368	2	0
Commuter estate car	1,778	0	0	2,669	7	0
MERCURY (Canadian)						
Monterey	1,481	0	0	2,222	17	0
Phaeton	1,640	0	0	2,461	7	0
Montclair	1,716	0	0	2,575	7	0
Phaeton	1,765	0	0	2,648	17	0
METROPOLITAN						
Hardtop	498	10	0	749	2	0
Convertible	516	0	0	775	7	0
M.G.						
A	663	0	0	995	17	0
Hardtop	724	0	0	1,087	7	0
Magnette	714	0	0	1,072	7	0
MORGAN						
4/4 Series II	498	0	0	748	7	0
Competition	550	0	0	826	7	0
Plus 4 (TR) 2-seater	645	0	0	968	17	0
Convertible	693	0	0	1,040	17	0
Plus 4 (Vanguard)	594	0	0	892	7	0
Convertible	641	0	0	962	17	0
MORRIS						
Minor 1000 2-door	416	0	0	625	7	0
2-door de luxe	433	10	0	651	12	0
4-door	441	0	0	662	17	0
4-door de luxe	462	0	0	694	7	0
Tourer	416	0	0	625	7	0
Tourer de luxe	433	0	0	651	12	0
Traveller	471	10	0	708	12	0
Traveller de luxe	488	10	0	734	2	0
Cowley	555	10	0	834	12	0
Oxford III	589	0	0	884	17	0
Traveller	665	0	0	999	17	0
OLDSMOBILE						
88	1,820	0	0	2,731	7	0
Super 88	1,965	0	0	2,948	17	0
98	2,260	0	0	3,391	7	0
PACKARD						
4-door Sedan	1,680	0	0	2,521	7	0
Station Wagon	1,745	0	0	2,623	17	0
Hawk hardtop	2,004	0	0	3,007	7	0
PANHARD						
Dyna Grand Standing	702	8	8	1,055	0	0
Convertible	1,032	8	8	1,550	0	0
PEERLESS						
G.T. 2-litre	998	0	0	1,498	7	0
PEUGEOT						
203	633	9	1	952	8	2
403	796	2	11	1,195	11	5
Estate car	865	0	0	1,298	17	0
PLYMOUTH						
Savoy Vee-8	1,718	0	0	2,578	7	0
Belvedere convertible	1,790	0	0	2,686	7	0
Savoy Suburban	1,915	0	0	2,773	17	0
Fury	1,890	0	0	2,971	7	0
PONTIAC						
Chieftain Catalina	1,980	0	0	2,971	7	0
Bonneville Custom	2,300	0	0	3,461	7	0
Super Chief Catalina	2,040	0	0	3,061	7	0
Star Chief Catalina	2,150	0	0	3,226	7	0
PORSCHE						
346A/1600 fixed head	1,330	0	0	1,995	7	0
Hardtop (detachable)	1,450	0	0	2,176	7	0
Cabriolet (detachable)	1,490	0	0	2,236	7	0
356A/1500 fixed head	2,100	0	0	3,151	7	0
Carrera hardtop	2,220	0	0	3,331	7	0
Carrera Cabriolet	2,260	0	0	3,391	7	0
PRINCESS						
IV	2,250	0	0	3,376	7	0
IV limousine	2,360	0	0	3,541	7	0
L.W.B.	2,150	0	0	3,226	7	0
L.W.B. limousine	2,150	0	0	3,226	7	0
RAMBLER						
De luxe	1,250	0	0	1,876	7	0
Super	1,285	0	0	1,928	17	0
Rambler (cont.)						
Estate car	1,375	0	0	2,063	17	0
Custom	1,350	0	0	2,026	7	0
Estate car	1,440	0	0	2,161	7	0
RENAULT						
750	437	0	0	656	17	0
Dauphine	505	0	0	758	17	0
(Ferlec clutch)	530	10	0	797	2	0
Frégate de luxe	894	10	0	1,343	2	0
Domaine estate car	894	10	0	1,343	2	0
Grand Pavois Transfluide	1,027	10	0	1,542	12	0
RILEY						
One-point-five	575	0	0	863	17	0
Two-point-six	940	0	0	1,411	7	0
(automatic)	1,045	0	0	1,568	17	0
ROLLS-ROYCE						
Silver Cloud	3,795	0	0	5,693	17	0
Limousine	4,595	0	0	6,783	17	0
Freestone and Webb	5,282	0	0	7,924	7	0
Hooper	5,085	0	0	7,628	17	0
H. J. Mulliner	5,550	0	0	8,326	7	0
James Young	5,010	0	0	7,517	7	0
Silver Wraith						
Freestone and Webb limousine	5,638	0	0	8,458	7	0
Freestone and Webb 7-passenger limousine	5,752	0	0	8,629	7	0
Park Ward	5,495	0	0	8,243	17	0
Park Ward 7-passenger limousine	5,085	0	0	8,708	17	0
H. J. Mulliner	5,625	0	0	8,438	17	0
Hooper limousine	5,580	0	0	8,371	7	0
Hooper 7-passenger	5,805	0	0	8,708	17	0
James Young	5,680	0	0	8,521	7	0
ROVER						
60	883	0	0	1,325	17	0
75	963	0	0	1,445	17	0
90	999	0	0	1,499	17	0
105S	1,088	0	0	1,633	7	0
105R	1,124	0	0	1,687	7	0
105R de luxe	1,155	0	0	1,733	17	0
Land Rover II 88	640	0	0	640	0	0
Diesel	740	0	0	740	0	0
109in Basic	730	0	0	730	0	0
Diesel	820	0	0	820	0	0
109in de luxe	750	0	0	750	0	0
Diesel	840	0	0	840	0	0
107in estate car	815	0	0	1,223	17	0
SIMCA ARONDE						
Aronde 1300	532	0	0	799	7	0
Aronde Châtelaine	650	0	0	976	7	0
Elysée 1300	599	0	0	899	17	0
Montlhéry	625	0	0	938	17	0
Grande Large (Flash)	679	0	0	1,019	17	0
Grande Large (Special)	705	0	0	1,058	17	0
SIMCA VEDETTE						
Beaulieu	965	10	0	1,449	12	0
SINGER						
Gazelle	598	0	0	898	7	0
Convertible	665	0	0	998	17	0
Estate car	695	0	0	1,043	17	0
SKODA						
440	575	0	0	863	17	0
1201	640	0	0	961	7	0
Estate car	695	0	0	1,043	17	0
450 convertible	725	0	0	1,088	17	0
STANDARD						
Eight	425	0	0	637	17	0
Super Ten	435	0	0	653	17	0
Pennant	485	0	0	728	17	0
Companion estate car	495	0	0	743	17	0
Ensign	599	0	0	899	17	0
Vanguard III	675	0	0	1,013	17	0
(automatic)	790	0	0	1,186	7	0
Estate car	765	0	0	1,148	7	0
Sportsman	820	0	0	1,231	7	0
STUDEBAKER						
Scotsman	1,130	0	0	1,696	7	0
Estate car	1,240	0	0	1,861	7	0
Commander	1,400	0	0	2,101	7	0
President	1,490	0	0	2,236	7	0
SUNBEAM						
Rapier	695	0	0	1,043	17	0
Convertible	735	0	0	1,103	17	0
TRIUMPH						
TR3	699	0	0	1,049	17	0
Hardtop	734	0	0	1,102	7	0
TURNER						
A.35 Sports	575	0	0	862	17	0
UNICAR						
Model T	265	0	0	399	10	0
VAUXHALL						
Victor	498	0	0	748	7	0
Victor Super	520	0	0	781	7	0
Estate car	620	0	0	931	7	0
Velox III	655	0	0	983	17	0
Cresta II	715	0	0	1,073	17	0
VOLKSWAGEN						
Basic	435	0	0	653	17	0
De luxe	505	0	0	758	17	0
Convertible	682	10	0	1,025	2	0
Karmann-Ghia coupé	822	10	0	1,235	2	0
Convertible	929	0	0	1,394	17	0
WOLSELEY						
1500	530	0	0	796	7	0
Fifteen-fifty	660	0	0	991	7	0
Six-ninety III	850	0	0	1,276	7	0
(automatic)	955	0	0	1,433	17	0